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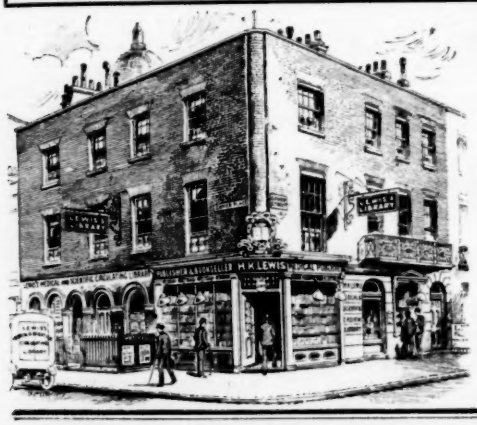

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RELATION OF TROPICAL (AMŒBIC) LIVER ABSCESS TO DYSENTERY: HISTORICAL.[2]

At the beginning of the present century there was much confusion and difference of opinion regarding the relationship, if any, between dysentery and the large single tropical liver abscess, which it is essential to make clear before we can consider the recent advances in our knowledge. Nor was that difference of opinion surprising; by 1900 only one variety of the causative organisms of bacillary dysentery had been discovered, and that recently; and although amœbæ had been found in dysentery as early as 1875 by Lösch in Russia and in 1883 by Kartulis in Egypt, not until 1903 did Schaudinn describe and name the pathogenic *Entamœba histolytica* and the harmless *E. coli*, and not till as late as 1913 did Walker and Sellards in the Philippines conclusively prove the pathogenicity of the former and the harmlessness of the latter. Similarly, Kartulis found amœbæ in sections of the walls of liver abscesses in Egypt in 1887, but up to 1902 they had only been found in about half the cases, and were very far from being accepted as the true cause of that disease. In India, as far as I have been able to ascertain, amœbic dysentery does not appear to have been recognised until, in 1902,[3] I showed it to be common in Bengal, and that the so-called tropical liver abscess was always secondary to amœbic dysentery, usually of a latent nature, although as early as 1891 Councilman and Lafleur had come to similar conclusions in the United States. Now that these important facts are fully established it is easy to see that formerly the great stumbling-block was our ignorance of the fact that there are two great classes of dysenteries, considered as one definite disease until quite recently; so that those whose experience happened to be in countries where the bacillary form prevailed naturally—and, as far as their experience went, correctly—denied its relationship to liver abscess, while in countries such as Egypt and India, where the amœbic variety is now known to be common, some noted the close relationship between dysentery and liver abscess, although others were misled by the frequent cessation of dysenteric symptoms for some time before a liver abscess appeared, into denying any such relationship. As I pointed out in 1913,[2] so definite is the relationship between liver abscess and amœbic dysentery that it is safe to assert that where numerous cases of dysentery without liver abscess complications were reported by older writers, the bowel disease must have been of the bacillary type and vice versa. Thus, neither Sir John Pringle in the terrible epidemic dysentery in the army in Flanders, in 1752, nor W. Baly in his 1847 Goulstonian lectures on dysentery in Millbank prison in London, met with liver abscess, and we now know that the prevailing type of dysentery in temperate climates, as well as in army and jail outbreaks, is bacillary. John Hunter, in his account of dysentery in the army in Jamaica in 1788, again does not mention liver abscess, and he considered the disease to be the same as that described by Sydenham as so prevalent in London in 1797–80.

On the other hand, all the great Anglo-Indian writers frequently met with liver abscess complicating dysentery, with the significant exception of Mackinnon, who dealt with jail dysentery in Northern India in 1848, while recent investigations show that to this day the bacillary type prevails in Indian jails, where the amœbic form is comparatively rare. Thus Annesley in 1828 records in his "Researches on the Diseases of India" liver abscess in 26 of 51 post-mortems on dysentery, while one of his beautiful coloured plates well illustrates amœbic dysentery as we now know it. It is also of great interest to note that Annesley divided dysenteries into uncomplicated and those showing hepatic symptoms, thus foreshadowing the present classification as bacillary and amœbic, although his descriptions and illustrations do not accurately correspond with the modern division. He also clearly stated that liver abscess was secondary to dysentery, and described the common post-mortem complications of sloughing amœbic dysentery—namely, peritonitis with or without perforation and post-colic abscess; hence it is quite certain that amœbic dysentery was common in Madras early in the nineteenth century. Twining in Bengal in 1835 also correctly described the post-mortem appearances and hepatic complications of amœbic dysentery, and pointed out that the bowel discharges may cease abruptly with the onset of liver symptoms, which were common in Europeans, but rare in natives of India, although the latter statement is at present far from true, probably on account of increased indulgence in alcohol among Indians. Parkes in 1846 found liver abscess in 21 per cent. of 61 post-mortems on fatal dysentery cases in British soldiers, but never found any in numerous post-mortems on Indians, being thus in agreement with Twining. He considered the abscesses were not pyæmic, as he never found inflammation or suppuration in the portal veins. Haspel in Algeria in 1847 and Bleker in Batavia in 1849 also found liver abscess a frequent complication of dysentery, the prevalent type in both countries being amœbic. Maclean in 1886 recorded liver abscess in no less than 60 per cent. of fatal dysentery cases in Madras, and Chevers, in his book published in the same year, supports the relationship, and quotes Waring as having found ulceration in the large intestine in 72 per cent. of a series of liver abscess cases, while Moore recorded figures of eight observers showing liver abscess in 18 per cent. or 1 to 8 of 1532 cases of dysentery, and Rankin in 150 fatal cases found dysentery without liver abscess in 66 per cent., dysentery with liver abscess in 28 per cent., and liver abscess without dysentery in 6 per cent. Fayrer, in his Lettsomian lectures before this society in 1881, quoted Sir Ranald Martin as having found liver abscess intimately related to disease of the cæcum, which is of great interest in relation to my own observations to be related presently.

* Lectures II. and III. will be published in coming issues of THE LANCET.

I may now pass on to the state of our knowledge in 1900, when I commenced my researches in Calcutta, and will begin with the opinions of the greatest modern authority, Sir Patrick Manson, as expressed in his classical work on Tropical Diseases. In the first three editions and reprints from 1898 to 1904 dysentery is treated as a single entity, although it was pointed out that the term probably included a group of diseases, and after discussing possible causative agencies, he summed up with the cautious wisdom of long experience, "Up to the present all or any of these claims, whether for bacteria or for protozoa, are still very far from being established," while he described the disease under the headings catarrhal, ulcerative, and gangrenous; bacillary and protozoal, including amœbic, dysenteries were not separately dealt with until the 1907 edition.

The confusion at the time I am speaking of is well illustrated by the completely contradictory statements in the articles on dysentery and liver abscess in the first edition of Allbutt's System of Medicine by Davidson and Lafleur respectively. Thus Davidson described the morbid anatomy of dysentery under the headings purulo-gangrenous and fibrinous or pseudo-diphtheritic, which correspond roughly with amœbic and bacillary dysenteries as we now know them, while he did not admit that amœbæ might be a cause of dysentery. Further, one of his four classes of liver abscess was tropical or endemic hepatitis, occurring in tropical or sub-tropical countries associated with or independent of dysentery; and he concluded, "It is obvious from the facts before us that liver abscess occurs as an uncomplicated disease and that when complicated with dysentery it not infrequently precedes it," while he allowed no causative powers to the amœbæ, but held that tropical hepatitis was a primary hepatic insufficiency due to residence in a hot climate, "which favours the settlement and growth of pyogenetic organisms in the liver, quite apart from any dysenteric complication," but he considered that an attack of dysentery might throw an additional strain on the liver and facilitate the entrance of bacteria by the portal vein. Lafleur, on the other hand, gave a clear account of amœbic dysentery, with amœbic liver abscess, both single and multiple, as its commonest complication, and attributed the suppurative action to the direct activities of the intestinal dysenteric amœbæ, as they were found in even small multiple liver abscesses without any accompanying bacteria, in which opinion he and Councilman were in advance of Kartulis, who held that the amœbæ produced liver abscess indirectly by carrying bacteria to the organ, the latter being less resistant than the amœba and dying in many cases—a view I have never been able to understand, as pyogenic bacteria do not so readily die out of abscesses in other parts of the body, although it may partly be explained by the inconstant results of the findings as regards bacteria and amœbæ in the small number of liver abscesses dealt with in the earlier papers on this aspect of the question. Thus, Kartulis found bacteria in 5, while 8 were sterile; Kruse and Pasquale found amœbæ in 6 and bacteria in 11 of 15 cases examined; and Councilman and Lafleur found bacteria in addition to amœbæ in 1 of 2 cases—cocci having been found 10 times and bacilli 6 times. Thus it is not surprising that the amœba was not accepted as the cause of the disease, although Manson in his earlier editions stated that they were present in over half his cases, which fact, however, did not convince him of their causative powers.

Lastly, in a discussion on dysentery at the 1902 meeting of the British Medical Association, our knowledge of the subject at that time was summarised in his opening address by the late Andrew Duncan,[3] lecturer at the London School of Tropical Medicine and a very able and experienced retired I.M.S. officer, who had the misfortune to be a decade or two ahead of his time—with the result that his career in India was ruined by his having the audacity to criticise the antiquated views of his director-general on cholera; that fate I was more fortunate in escaping, although certainly not through any want of outspokenness on my part. In opening the discussion on dysentery Duncan said: "India is a tropical country and I would advance the view that the amœba has nothing to do with dysentery in that country as a causative agent. The evidence brought forward in its favour to my mind is not at all conclusive." On the vexed question of the relationship, if any, of liver abscess to dysentery, he said: "My own view is that large tropical liver abscesses do not bear any special relation to antecedent dysentery, but that multiple abscesses do," and he correctly remarked that liver abscess was rare in the West Indies, in English asylums, and during the South African War, in the last two of which at least the prevalent type of dysentery is now known to have been bacillary. Very similar views were also expressed about this time in a short editorial note in the *Indian Medical Gazette*, in which the rarity of liver abscess cases in Indian jails was advanced as an argument against the disease being in any way related to dysentery.

Enough has been said to prove that, in spite of the valuable work, especially of Kartulis and Councilman and Lafleur, medical opinion in 1902, particularly in India, was against the recognition of amœbic dysentery as a distinct disease and also to a great extent contrary to its acceptance as the causative agent of tropical liver abscess, while there were still great differences of opinion as to whether such abscesses were in any way directly associated with dysentery. It was to the 1902 discussion on dysentery that I contributed my first paper on this subject, based on two years' researches in Calcutta, which may next be summarised.

CALCUTTA RESEARCHES OF 1900–02 ON AMŒBIC DYSENTERY AND ITS RELATIONSHIP TO TROPICAL LIVER ABSCESS.

Between April, 1900, and the end of 1902 I acted for the most part as professor of pathology at the Calcutta Medical College Hospital, and devoted much of my time to investigating amœbic disease; as early as July, 1900, I found numerous active amœbæ in both the wall of a liver abscess and in the dysenteric ulcers in the large bowel, which I believe was the first recognition of amœbic dysentery in India. As early as 1870 and 1871 Lewis and Cunningham had found amœbæ in cholera and other cases, but Cunningham certainly considered them to be non-pathogenic, while, according to Dobell, they were probably the harmless *E. coli* of present nomenclature. I am credibly informed that McConnell found living amœbæ in liver abscess pus in Calcutta soon after and independently of Kartulis, but as far as I can learn he never recorded his experience, while Lafleur, in his 1897 article on amœbic dysentery, makes no reference to its having been found in India. During the next two years I worked at the subject with abundant post-mortem and clinical material and recorded my results in 1902 and 1903 in two papers, the main points of which were as follows.

Constancy of Amœbæ in Tropical Liver Abscess.

The first point I set to work to elucidate was the frequency with which living amœbæ could be demonstrated in the large tropical liver abscesses so frequently met with in India and Calcutta. I soon found that at post-mortems it was always easy to detect them in large numbers in the walls of such abscesses by scraping the latter and searching the material under a low bower of the microscope, but much more difficult to find them in the thick pus in the centre of such abscesses, which was in accordance with Kartulis's demonstration of amœbæ in sections of the walls of liver abscesses in Egypt. In order to get a larger number of cases than the post-mortems afforded, I next arranged with my surgical colleagues when they opened a liver abscess, as was almost invariably the procedure in those days, to place some of the thick pus in one sterile test-tube and in another a light scraping of the wall of the cavity taken with a Volkmann spoon, and in this way I accumulated the

data in the first two tables of my 1902 paper, including 17 cases examined post mortem and 20 at the time of opening. In the first place in 22 cases in which the thick pus was examined in only 4 were amœbæ found. On the other hand, with much less expenditure of time, the protozoal parasites were found in scrapings of the abscess walls in no less than 35 of the 37 cases, while of the two negative cases one was examined first on the twelfth day after being opened, and the other post-mortem 14 days after being incised and drained, by which time the amœbæ might have died out. Living amœbæ were, however, found in scrapings made on the third, fourth, and ninth days after being opened, others having found them in the discharge several days after operation. Active amœbæ were thus found by my method of scraping the abscess walls in 35 consecutive cases examined at the time of operation, dressing or post mortem within nine days of being opened and drained. I therefore concluded that they are practically invariably present, as I have since verified in scores of later cases, the only exceptions being the rare small encysted abscesses from which the amœbæ have died out.

Sterility of Great Majority of Amœbic Liver Abscesses when First Opened.

The next point to decide was the frequency of pus-forming bacteria in large tropical liver abscesses, which are so different clinically from pyæmic, pylephlebitic, and cholangeitic multiple liver abscesses due to septic organisms. Out of 24 cases in which cultures were made from the pus taken in sterile test-tubes at the time of operation, 15, or 62 per cent., were sterile, as were 3 out of 5 unopened abscesses found post mortem, or nearly two-thirds of the total cases. In a later series of observations I found 86 per cent. of 87 cases sterile on first being opened, so it is clear that the very great majority of such amœbic abscesses are free from culturable bacteria, while none could be found microscopically. Unfortunately, few remained sterile for long in a tropical climate after opening and drainage in the ordinary way into dressings; this point I shall return to in my next lecture.

I therefore concluded that not only were the amœbæ constantly present in active large tropical liver abscesses, but that other causative bacterial organisms were completely absent in the great majority of them, thus confirming by the examination of a large amount of material the opinion of Councilman and Lafleur that the amœba, since identified as the *Entamœba histolytica* of amœbic dysentery, was the causative organism of this class of liver abscess.

Frequency of Association of Dysentery with Liver Abscess

Very early in my investigations I became convinced that the large tropical amœba-containing liver abscesses in Calcutta were very frequently accompanied by dysenteric lesions post mortem, and that they were always associated with the amœbic and never with the bacillary type of that disease, and now that I had discovered the prevalence of amœbic dysentery in India, the key was furnished to the remarkable variations in the proportion of liver abscess cases to dysentery recorded by various observers, which it was of great importance to follow up. The striking fact that the proportion of liver abscess to dysentery cases in the British Army in India was 1 to 5 to 1 to 7, while in the Indian jails it was only one to several hundred, had never received any satisfactory explanation, as early and efficient treatment by the European medical officers might be expected in both cases. If, however, the prevailing type of dysentery was amœbic in the first case and bacillary in the second the problem would be solved, and this is now known to be the case. Moreover, the then recent discovery of the dysentery bacillus by Shiga and Kruse, and a little later of another type by Flexner, with the aid of which serum reactions could be obtained in the more chronic cases, opened up a new field of research in clinical differentiation of the dysenteries, of which I early availed myself, as reported in my second paper of 1903.

The first point to be determined was the frequency of the association of any form of dysentery with liver abscess in view of the widely divergent data recorded regarding it, as already pointed out. On turning again to the cases in which both the clinical records of antecedent dysentery and the post-mortem appearances in fatal liver abscess cases were noted, it appears that in four cases there was no clinical history of dysentery, yet amœbic ulcers were found post mortem, proving that an absence of clinical signs of dysentery does not exclude the presence of amœbic ulcers in the large bowel. Again, in the clinical and post-mortem records of 14 further cases in three there was a previous history of dysentery 18 days, 3 months, and 1 year respectively before admission for liver abscess, yet no ulceration of the large bowel was found post mortem, so it is also possible for antecedent dysentery to clear up without necessarily leaving any ulceration by the time the patient dies of liver abscess. It is clear from these facts that in order to get accurate data of the relative frequency of antecedent dysentery in liver abscess cases it is essential to obtain both clinical and post-mortem records, and even then it is possible that a mild attack of bowel trouble of amœbic origin, which often gives rise to only slight diarrhœa, may be overlooked clinically and leave no evident post-mortem appearances, so that even with such complete records a few negative cases will not exclude antecedent latent amœbic ulceration of the large bowel, as I shall presently show. On adding together the two series we have 24 cases in which the clinical and post-mortem records were complete, in 23, or 95·83 per cent., of which there was either a clinical or post-mortem evidence of dysentery, while in 58·33 there were both.

On examining the post-mortem records before my time I found that abstracts of the clinical records had also been entered in many of them, especially in the time of McConnell, who would have been a much greater pathologist if he had not also had to do the work of resident physician and to vacate the pathology professorship under the rules on completing 12 years' service, when he soon became the leading physician in Calcutta. On adding these older and clinically less complete records to the foregoing cases we have clinical and post-mortem data regarding 63 liver abscess cases with evidence of dysentery in 90·48 per cent., including 55·5 with both clinical and post-mortem evidence, 20·63 per cent. with only post-mortem, and 14·3 per cent. with only clinical evidence of that disease. The remaining 9·52 per cent. of negative cases are easily explained by incompleteness of the records and the healing of slight latent ulceration of the colon before death from subsequent liver abscess. I therefore concluded that dysenteric ulceration of the large bowel is an almost, if not invariable, accompaniment of large tropical liver abscesses.

Lastly, in all my own cases the dysenteric lesions found post mortem in liver abscess cases were of the amœbic variety, and as far as I could judge from the older records the same was largely true, while an analysis of clinical records showed that in 80 per cent. there was clear evidence that the amœbic bowel disease preceded the fever and hepatic pain, which I took to indicate the commencement of the liver complication, in 7·5 per cent. the dysenteric and liver symptoms commenced about the same time, and in another 7·5 per cent. the symptoms of dysentery set in after the hepatitis, but in both these last classes the post-mortems showed older as well as recent lesions, while in the remaining 5 per cent. no bowel lesions were found post mortem, although there was a history of more recent dysentery than hepatitis, so still earlier slight dysentery may have been unrecorded. I therefore concluded that amœbic dysenteric ulceration of the large bowel, often of a latent nature not giving rise to any very evident clinical symptoms, always preceded the formation of

a large tropical liver abscess, to which the liver complication was secondary.

Value of Early Results.

I have dealt at length with the results obtained in my first two years' investigations of amœbic disease, as they formed the basis of the advances I was able to make in the remaining 18 years' work in Calcutta, while it is clear that my conclusions were diametrically opposed to those of the distinguished tropical physician who opened the 1902 debate on dysentery; I think it will be of interest to add that when home on leave in the following year I met Duncan for the first time, and with the greatest candour he volunteered the statement that my paper upset nearly everything he had said in his opening address, so it is evident that the facts I then brought forward were of some value in clearing up much-debated points regarding the relation of dysentery to liver abscess and the true ætiology of the latter.

There was, however, one error in my 1902 paper which I corrected in that of the following year on amœbic dysentery in India. It will be noted that I have so far only spoken of large single tropical liver abscess and said nothing about small multiple ones, which I at first thought, with nearly all my predecessors, to be pylephlebitic in nature, and I at first came to the conclusion that 17 cases of multiple small abscesses of the liver in the former post-mortem records were septic portal infections secondary to dysentery usually "of the ordinary catarrhal as opposed to the amœbic variety." Further experience soon showed me that innumerable small liver abscesses were not rarely secondary to acute sloughing amœbic dysentery often without very evident clinical hepatic symptoms, and bacteriologically completely negative, although swarming with active amœbæ, as Lafleur had previously recorded. Throughout my long subsequent experience of post-mortems in Calcutta I examined many such cases, and, much to my surprise at first, I always found them to be amœbic in origin and generally sterile as regards bacteria, so that in some 200 dysentery post-mortems, many of them sloughing or gangrenous cases, I never met with a single pure bacterial portal pyæmia with absence of amœbæ, although double infections with both classes of organisms were not so very rare. This is very astonishing when we think of the large number of chronic dysenteric ulcerations, including numerous cases of bacillary dysentery seen in the Calcutta post-mortem room, through which septic infection of the portal system might be expected to occur not infrequently, and the rarity of pylephlebitis under such conditions is difficult to explain. I think it is largely due to the fact that the pathogenic lesions of bacillary dysentery are essentially a toxic necrosis of the epithelial layers of the mucous membrane not much affecting the more vascular submucous coat (as shown in Plate 9 of my "Bowel Diseases in the Tropics"), while in the more chronic forms of bacillary dysentery there is a good deal of fibrous tissue formation in the bases of the shallow ulcers, which protect the more vascular deeper layers from microbial invasion (illustrated in Plate 10 of the same work). On the other hand, the lesions of amœbic disease are essentially an affection of the submucous coat (Plates 5 and 6, of the above), often extending in the more acute cases through all the layers of the bowel wall to reach the peritoneal coat. Whatever the explanation may be, I am sure that the great majority of small multiple liver abscesses seen in Calcutta are amœbic in origin; an important fact I shall return to presently in considering the mode of formation of the large single liver abscess, after dealing with the further evidence I have accumulated regarding the relationship of amœbic liver abscesses as a whole to amœbic dysentery active and latent.

In 1913[2] I was able to supplement the data I recorded in 1902 of clinical or post-mortem evidence of dysentery in 90 per cent. of liver abscess cases by an analysis of 45 post-mortems I had performed in such cases in the previous ten years, with active amœbic dysentery in 77·8 per cent. and scars of former dysenteric lesions in 20 per cent. more, or a total of 97·8 per cent., leaving only one case with no post-mortem evidence of dysentery; proving that by careful search for dysenteric lesions they can practically always be found in fatal amœbic liver abscess cases. I also recorded at the same time an analysis of careful clinical records of 50 liver abscess cases in patients in the Calcutta European hospital during nine years with a history of dysentery in 72 per cent. and of diarrhœa in another 14 per cent., leaving only 14 per cent. without history of any looseness of the bowels, thus confirming my earlier data on this point.

Distribution of the Lesions in the Bowel in Relation to the Type of Amœbic Liver Abscess.

In studying a series of fatal liver abscess cases in the post-mortem room nothing is more striking than the differences between the typical large fibrous walled chronic single amœbic abscess and the multiple small acute abscesses from the size of a walnut down to that of a large pin's head, all secondary to amœbic ulceration of the large bowel. A close examination, however, of the distribution and extent of the bowel lesions (see diagram) throws much light on the matter. The positions and extent of the lesions, from the lowest part of the ileum down to the rectum, are shown diagrammatically by shading in 96 consecutive post-mortems in which I carefully noted them. The first line shows 27 cases of bacillary dysentery divided into acute cases with a continuous series of lesions extending in most of them from the lowest few inches of the ileum down to the rectum, and chronic ones of over one month's duration in which, as a rule, only the lower half or two-thirds of the colon is affected, a point of importance in regard to treatment as I have elsewhere pointed out. As none of these bacillary cases were complicated by any form of liver abscess they do not concern us further in this connexion, except to point out how relatively few they are compared with the number of fatal cases of amœbic disease, including those due to liver abscess, as shown in the last three lines of the diagram. The second line shows 25 cases in which the direct cause of death was amœbic dysentery, also divided into acute and chronic cases. It will be observed that in 5 of the 15 acute cases liver abscesses were also found, in 4 of which they were multiple small ones, and in the remaining a single small abscess, while in 4 acute peritonitis was present. Among the 10 fatal chronic amœbic dysenteries perforation was the cause of death in 4 and abscess around the spleen in 1. The last two lines show the bowel lesions in 42 cases in which death was attributed to liver abscess, while in 2 the fatal issue was due to post-colic abscess, and in Case 44 to cirrhosis of the liver. The liver abscess cases have been classified in accordance with the number and sizes of the abscesses—namely, multiple small ones in 1 to 5 and 20, from two to four large chronic fibrous-walled abscesses in Cases 6 to 17a, and single large ones in Cases 21 to 43, the great majority of which had been diagnosed as such and opened during life. It will thus be seen that the number of deaths directly due to liver abscess were nearly twice as numerous as those directly due to amœbic dysentery, clearly proving the immense importance of this serious complication.

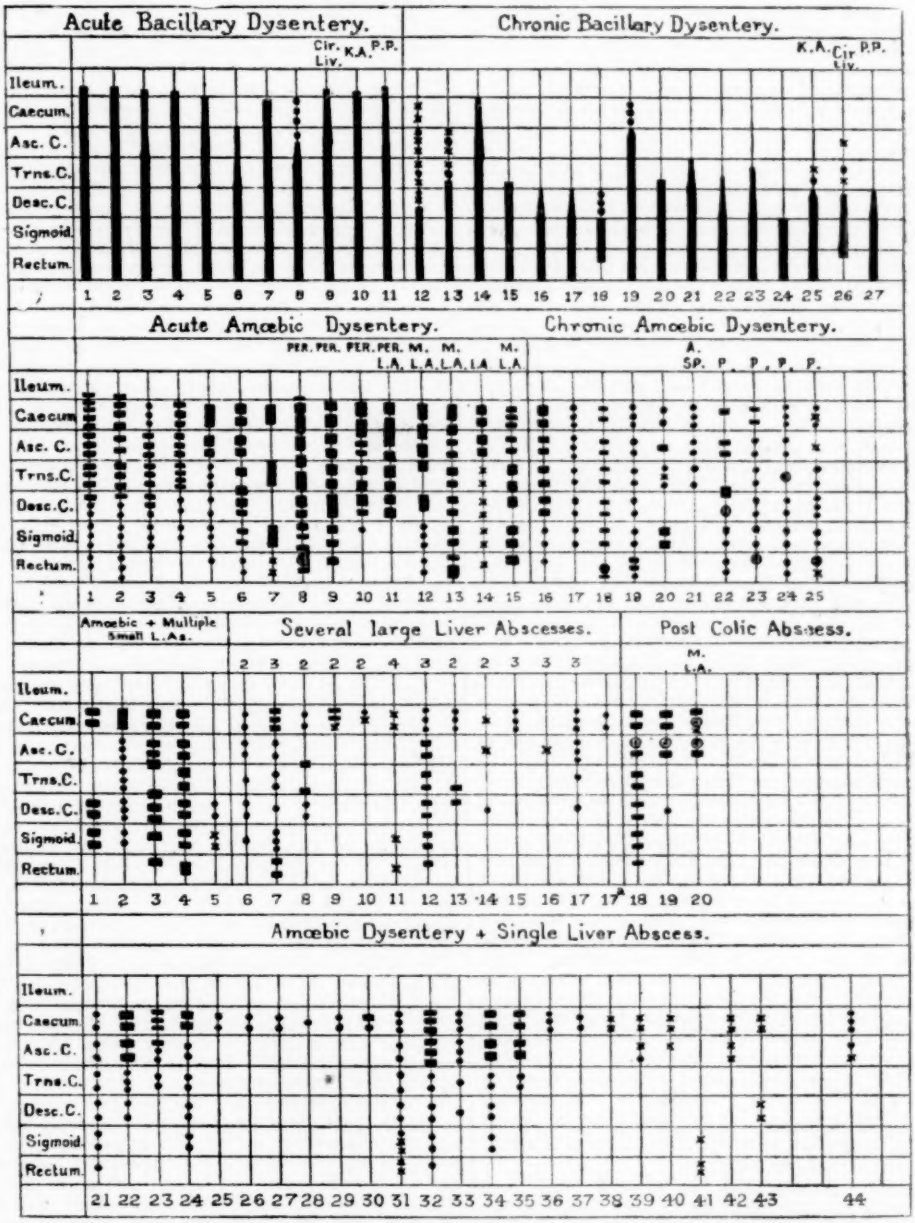
Bowel Lesions in Small Multiple Liver Abscesses.

A cursory examination of the diagram will at once attract attention to the great differences in the extent and distribution of the large bowel ulcers in the multiple small and one or more large abscesses respectively, which is what I want particularly to direct your attention to. Thus in no less than 8 of the 9 cases of multiple small abscesses the colon showed large sloughing or gangrenous ulcers represented by the extensive darkly-shaded patches in the diagram, while in 7 of the 9 these extensive lesions were distributed over the great portion of the total length of the large intestine, although never invading the ileum, as acute bacillary dysentery usually does.

The remaining multiple case, No. 5 of line 3, was an altogether exceptional one, as will appear immediately. In the four cases dying of sloughing amœbic dysentery, as well as in two admitted to the surgical wards for gangrene of the rectum and peri-urethral abscess respectively, the complicating multiple liver abscesses aroused no suspicion during life. Further, in Cases 1 and 2 of line 3 large liver abscesses opened during life were found post mortem to be accompanied by numerous small ones throughout the liver, and so belong to a class intermediate between multiple small and single large abscesses, while the bowel lesions were also intermediate in extent between the usual types of distribution in the main classes of suppurative hepatitis—namely, a few large ulcers not very widely distributed through the colon. while Case 14 in line 2,

DIAGRAM OF THE DISTRIBUTION OF DYSENTERY IN THE INTESTINE.

(Reproduced from the Writer's "Bowel Diseases in the Tropics," with the kind permission of the Oxford Medical Publications.)



The parts of the bowel in each case affected by the dysenteric process are in the diagram shaded *continuously* when the mucous membrane was uniformly involved over a large part of the intestine, as is usual in bacillary disease, and shaded in an *interrupted* manner when there were healthy portions of the mucous membrane remaining between the ulcers, as is almost invariably the case in the amœbic form. *Transverse dark lines* represent ulcers extending across the axis of the bowel with healthy mucous membrane between them; a *dot* stands for small round or oval separate ulcers on an otherwise normal mucous membrane of less advanced amœbic disease; the *separate square or oblong* shaded parts represent the large thickened patches of ulcerated bowel in acute amœbic dysentery. An X indicates scarring of healed ulcers, and a *dot within a small circle* represents perforation of the large bowel at the point indicated.

with a single small abscess, also shows similar moderate bowel lesions.

There remains the exceptional Case 5 of line 3 with multiple small abscesses and very limited small amœbic ulcers in the descending colon and scars in the sigmoid, the history of which is most instructive. The patient was a young boy—in such cases liver abscesses are very rare—admitted for a fractured femur for which tenotomy of the tendo Achillis was performed with subsequent septic infection of the small wound. He died very suddenly and unexpectedly, and post mortem I found four large and numerous small liver abscesses containing numerous amœbæ and streptococci, the latter also being recovered from the wound, so I attribute the numerous small liver abscesses with only slight bowel lesions to the combination of secondary streptococcal with a primary amœbic infection, and it is noteworthy that such extensive liver lesions again aroused no suspicion during life.

It will be clear from the foregoing analysis that small multiple amœbic liver abscesses are essentially an acute, and usually quite unsuspected, complication of extensive sloughing amœbic dysentery with well-marked bowel symptoms, and consequently form quite a distinct clinical condition from the insidiously developing large single abscess with very slight or completely latent bowel symptoms, such as are illustrated in the remainder of the diagram to which we may now turn. A glance at the distribution and extent of the bowel lesions in Cases 6 to 17a of line 3 in which from two to four large chronic abscesses were found, and of 21 to 43 in line 4 with a single abscess, reveals such a close similarity between the two series that it is clearly only an accident whether one or two to four collections of pus happened to form, so their causation may be considered together. It will be seen that in none of them were the bowel lesions so large or widely distributed as in the acute sloughing dysenteries accompanying multiple small liver abscesses. Still more striking is the fact that in no less than 13 of the 36 cases the ulcers were absolutely limited to the cæcum, while in four more they only extended to the ascending colon, so that only the uppermost fourth of the large bowel was involved in nearly half the cases, while in several more only a very limited part of the colon was involved. In all such cases dysenteric symptoms are nearly certain to be completely absent while the patient is under observation for liver abscess, and in many of them no history of previous dysentery will be obtainable. Moreover, in Cases 38 to 43 only scars of former dysentery were found, which are indicated by small crosses in the diagram, and if we add these six cases to those with very limited ulcers we get a total of no less than 23 out of 36 cases, or almost two-thirds, in which the dysenteric lesions were pretty certain to have been latent during life at the time the patients came under observation for liver abscess. We thus obtain from this study a complete explanation of the former great stumbling block against the recognition of tropical liver abscess as always secondary to dysentery—namely, the absence of clinical signs of that disease in the large majority of patients suffering from this serious liver affection, and conclusive confirmation of the position I took up in 1902—that large single liver amœba containing liver abscesses are always secondary to amœbic ulceration of the bowel, usually of a latent nature.

Method of Formation of the Large Single Amœbic Liver Abscess.

It is generally agreed that the amœbæ pass from the bowel wall to the liver as a rule through the portal vein, but it is difficult to explain the formation in this way of the common large single fibrous-walled abscess. This, however, is the end-product of a somewhat chronic pathological process, and it is only by a study of all the stages of its production from the earliest beginnings that we can hope to elucidate the problem, a possible solution of which I put forward in my paper of 1903,[4] in which the earliest stages are illustrated, as seen in the acute rapidly forming multiple small abscesses of the liver accompanying sloughing amœbic dysentery, which I have mentioned is generally a pure primary amœbic infection. In Fig. 4 of that paper is depicted a minute pinhead-sized abscess with clotting in an interlobular branch of the portal vein and commencing cellular infiltration and softening of its walls from a case of mixed amœbic and staphylococcus infection, while the small hepatic arteries and bile-ducts are healthy. Fig. 5 of the same paper, from a case of pure amœbic infection, shows both well-stained apparently healthy and granular degenerating amœbæ entangled in blood-clot within a small branch of the portal vein. It is clear from these specimens that the earliest stage of the formation of small multiple amœbic liver abscesses is inflammation with clotting in the minute branches of the portal vein, where the amœbæ coming from the bowel ulcers lodge, which is followed by softening of the thin walls of the blood-vessels and extension of the inflammatory process to the liver parenchyma. I believe that the addition of a bacterial infection greatly facilitates the softening and breaking down of the vein walls, with the formation of numerous minute abscesses, especially when the virulent, but comparatively rare, streptococci are present; and that this accounts for the rapid formation of small abscesses, in addition to several large ones in the mixed amœbic and streptococcal infection in the tenotomy wound case already mentioned in the absence of any extensive amœbic bowel ulceration. On the other hand, when multiple small abscesses arise in the liver as a result of pure amœbic infection secondary to extensive sloughing dysentery, the protozoal organisms reach the liver in enormous numbers, as is evident from the number seen in a single field of an ordinary high power of the microscope in the blood-clot in a minute interlobular vein in the figure I have just shown you. In that, the usual case, I suggested that the clotting in the small veins is sufficiently extensive at various points to cut off the blood-supply from small areas and so produce focal necrosis leading in their turn to softening of the walls of the veins, enabling the amœbæ to escape into the soft-liver tissues and produce abscesses.

We have next to consider the more difficult problem of how one or more large abscesses can develop as the result of a portal infection, but first I must say a few words regarding other possible modes of infection of the liver. In my first paper I was inclined to think that the frequency with which large abscesses occurred in the upper part of the liver under the diaphragm, and the fact that in acute amœbic dysentery the protozoal organisms frequently penetrate the whole thickness of the bowel wall and are found in the lymph on its peritoneal coat without actual visible perforation, suggested the possibility of their passing in the lymph flow up to the under-surface of the diaphragm and there penetrating the liver substance or producing the so-called perihepatic abscess. It is possible for a liver abscess to be formed by direct extension of amœbic infection from the bowel to the liver, but I have met with only one case of this nature, so it is quite exceptional. The next coloured drawing shows the opposite condition of extension of an hepatic abscess to discharge into the colon, which also shows a very chronic form of amœbic dysentery, which, as a matter of fact, had not produced dysenteric symptoms while the patient was in hospital for the hepatic complication. Further studies by cutting sections of the walls of apparently suprahepatic abscesses convinced me that they are really formed within the organ, and not between it and the diaphragm, and what at first sight appears to be the capsule of the liver is really the deep fibrous wall of an abscess within the organ, the outer wall of which has merged with the diaphragm to which the liver had become adherent, the abscess having thus originally developed within the organ, as is quite clearly the case with the great majority of such collections of pus. Moreover, single liver abscesses

are rarely found in sloughing amœbic dysentery with penetration of the parasites to the peritoneal coat of the bowel, but only multiple small ones which are certainly portal infections, so it is evident that we cannot explain the development of the large single abscesses as a class except as infections from the bowel through the portal vein.

We have to look to another intermediate stage to explain the ultimate development of the fibrous-walled large abscesses, which is not very commonly met with, although I have seen several in my long experience of tropical pathology. I refer to large ragged cavities without well-defined walls, which are intermediate in acuteness, and in the extent of the primary bowel lesions, between the small multiple and the large chronic abscesses. In such cases there is no definite limiting membrane, but the tissues around the irregular cavity are infiltrated by pus and appear at first sight to be a number of minute abscesses immediately surrounding the central collection of pus. On making sections it can be demonstrated that the suppurative process is extending from the central cavity along the veins, in which clotting and softening is taking place accompanied by very numerous amœbæ, without any bacteria being present in at least some of the cases, the pathological process being thus but a more extensive development of that by which the small multiple abscesses are produced. We have only to imagine a somewhat less acute process in which the patient survives long enough to allow the active spread of the suppuration to come to an end, and organisation of the inflamed tissues around the cavity to take place and form a fibrous capsule and we can visualise the whole process of the development of the more chronic type of abscess. We have also seen that in cases in which one to four large chronic abscesses are found the amœbic ulceration of the bowel is comparatively slight and superficial, and usually limited to a very few ulcers in the upper part of the colon, so that the number of amœbæ likely to reach the liver through the portal vein within a limited time in such cases will be infinitely fewer than in the extensive sloughing dysentery accompanied by multiple small abscesses. I shall show in a later lecture that very many cases of acute amœbic hepatitis may clear up without going on to definite abscess formation, so it is clear that many amœbæ may reach the liver without suppuration in the organ necessarily taking place, in which respect the amœba apparently differs from pyogenic bacteria producing pylephebitis, I believe owing to the greater difficulty with which the protozoal parasite causes inflammation of and breaks down the walls of small veins.

Taking all these facts into consideration I suggest that in the slight or latent amœbic colitis from which large amœbic abscesses usually result, the comparatively few amœbæ reaching the liver become entangled in blood-clot in the small interlobular veins, producing congestion of the organ, but that the vast majority of them undergo degeneration within the vessels, not being able to escape through the vessel-walls without some previous damage to their coats, in which case only what I have called presuppurative amœbic hepatitis results. If septic organisms are also present softening of the vein walls and multiple small abscesses may occur with slight bowel lesions, as I have already shown, but these are exceptional cases. When, however, the amœbæ happen to reach some part of the liver in such numbers as to cause clotting of several contiguous small veins so as to interfere with the blood-supply sufficiently to produce a small focal necrosis with consequent softening of the walls of the veins allowing escape of the amœbæ into the soft-liver tissue, the commencement of an abscess results. The organisms then spread along the opened veins producing further clotting and softening, as I have shown occurs at the margin of an actively spreading ragged walled abscess, with further breaking down of the liver substance and extension of the cavity, and this process continues in concentric circles until, if the patient survives long enough, a fibrous capsule develops, when the abscess only increases by distension of the cavity by continued formation of pus from its walls, but without further destruction of liver tissue—an important practical point I shall return to in my next lecture. Thus I conclude that almost all forms of amœbic liver abscess are due to pure amœbic infections from the bowel through the portal veins with variable numbers of amœbæ, while it is also easy to understand that whether an amœbic hepatitis goes on to suppuration or not may often be in the balance, so that certain predisposing causes, such as chills or alcohol, may easily turn the scale and bring about suppuration, which early diagnosis and suitable treatment may prevent.

CONCLUSIONS.

I have now completed my survey of the principal points in the ætiology and pathology of amœbic hepatitis, which I have dealt with at length because I hope to prove in the remaining lectures that amœbic liver abscess is both an easily preventable and a much more readily curable disease than it was only a few years ago, and that fatal cases have already so greatly decreased in India, and doubtless elsewhere, that future investigators will have little chance of obtaining the abundant material I had in my 20 years' work in Calcutta, that paradise of tropical pathologists.

My conclusions, which are now in agreement with those of more recent observers too numerous to mention, may be briefly summarised as follows. The serious affection formerly known as tropical liver abscess, both in the acute multiple, small, and chronic large single forms, is produced by infection through the portal vein with the *Entamœba histolytica*, only very occasionally assisted by bacteria, and is always secondary to antecedent amœbic ulceration of the large bowel, which is clinically active and acute in the multiple variety, but usually completely latent clinically in the more chronic single variety, while such abscesses never occur in relation to bacillary dysentery—conclusions which are a great advance on the generally accepted knowledge two decades ago.

References.—1. THE LANCET, 1914, ii., 637, 683, 731, and 783-2. Dysenteries, 1913, pp. 1-33. 3. Brit. Med. Jour., 1902, ii., 844. 4. Ibid., 1903, i., 1315.

The Advantages OF THE METRICAL SYSTEM FOR PRESCRIBING.

Introduction to a Discussion at the North British Branch of the Pharmaceutical Society of Great Britain, held in Edinburgh on Feb. 15th, 1922,

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THIS subject has been forced on our attention by circumstances due to the war. The unusually large number of students attending the class of materia medica, the necessity of giving an adequate medical education to them without lowering the standard of knowledge and acquirement, the loss of time which many of them had experienced, and the difficulty encountered in resuming their studies, together rendered it necessary to lighten the curriculum or to make it more easily overtaken. Instead of teaching two systems, therefore, and letting the individual student exercise his preference, we weighed the relative advantages and disadvantages, made our choice, and adhered to that entirely. During the last two years we have learnt much, and desire to make known the results of our experience to the pharmaceutical as well as to the medical profession. The conclusions formed from this experience are that metrical prescribing will certainly displace the imperial method, that the process of changing from one to the other will probably begin at once, and that the numbers of those who prescribe according to the metric weights and measures will gradually, if not rapidly, increase.

POINTS OF VIEW OF WORKERS CONCERNED.

Beginning with the postulate that most people prefer the easier path, we must, nevertheless, classify the people concerned into (*a*) students learning the subject for the first time with nothing to unlearn; (*b*) practitioners who have acquired one method and see no advantage in a change; and (*c*) pharmaceutical chemists, who may naturally dread the confusion.

Taking these classes in order: (*a*) The students, appreciating the ease of calculation and the simplicity of the metric system, meet with no difficulty until they encounter the second class, their clinical teachers, and are obliged to follow their instructions in the other method. (*b*) The second class, or practitioners, having learnt their doses in minims, grains, and drachms (learning, however, the doses of certain recent remedies in metric terms exclusively—e.g., salvarsan, antitoxic serums, and vacines), being unable readily to translate from one system to the other, and having a natural dislike to change, are apt to exaggerate these difficulties. They may add to them others of the imagination—the chief being the fancied hostility of the dispenser to the dispensing of such prescriptions. (*c*) The difficulties of the third class, the pharmacists, are the expense of weights and measures, or alternatively of errors in reading or transposition of quantities from the one system to the other. So far we have neither met with nor heard of any difficulty arising from ignorance or incompetence of the members of the pharmaceutical profession, nor did I expect to meet with any. Certain principles and practices may be formulated which should go far to obviate possible difficulties.

CONVENIENCES OF THE IMPERIAL SYSTEM.

The imperial system modified for prescription writing by the additional use of the apothecary's weights has owed its persistent use to certain conveniences which it possesses. These are, first, that the weights and measures of the system were mainly originally convenient domestic measurements, the handful being represented by the ounce, the drop by the minim, the mouthful by the fluid ounce, the teaspoonful by the fluid drachm, a drink by the pint, and the pailful by the gallon. Secondly, the relationship between the weights as well as that between the measures has been arrived at to a considerable extent by the simple process of successive doublings. The imperial ounce doubled successively four times equals the pound. The apothecaries' drachm doubled successively three times equals the apothecaries' ounce. The fluid drachm doubled successively three times, equals the fluid ounce, and the pint doubled successively three times equals the gallon. Thirdly, the dissimilarity between the names of these various increments lessens the likelihood of confusion.

COMBINATION OF ADVANTAGES OF THE TWO SYSTEMS.

The advantages of the metric system, on the other hand, consist in easy divisibility by tenths, and simple interchange into equivalents between the respective weights and measures. We may combine the advantages of the two systems, to some extent, for prescription writing by visualising the fluid domestic measures, —e.g., the teaspoonful, &c.—by the nearest metrical equivalent, 5 c.c., and then doubling; thus 5 c.c. is approximately equivalent to a large teaspoonful, 10 c.c. to a dessertspoonful, and 20 c.c. to a tablespoonful. Or, if we start from 1 c.c. and having doubled it (2 c.c.) and wishing about twice the quantity again instead of 4 c.c. take 5 c.c. in order to make it metrical. The patient should be directed to provide himself with a measure graduated in these quantities in place of domestic teaspoons, &c.

This principle may also be carried out with our conception of the unit to represent the grain which we therefore take as 0·05 of a gramme. Two grains and four grains present no difficulty, being ·1 and ·2 of a gramme respectively. But our discrepancy becomes marked when we come to 10 grains. Therefore in deciding on dosage we must make a new departure and consider whether 1·0 gramme is too large a quantity or ·5 too small. Thus, for quinine in malaria, to represent a 10 grain dose 1 gramme is the preferable quantity, but for barbitone and phenazone ·5 as the metrical equivalent is the safer quantity. Having confined our figures, therefore, to 1, 2, and 5, the questions of symbols and nomenclature may be also simplified. The former can be dealt with easily by simple avoidance. Why use any? Nor need we be disturbed by Lord Randolph Churchill's "damned dots." To prevent errors in placing the decimal point draw a perpendicular line immediately to the right of the whole numbers. If we confine ourselves to the use of the straight perpendicular line between the units and the fractions, symbols and dots are unnecessary. Solids are to be weighed and fluids to be measured. Percentages are to be expressed by the weight of a solid in the volume of a fluid, and in the case of fluids, by volume in both. The following are illustrative examples:—

℞	Phenacet.	0 5	℞	Sulphur præcip. ..	5 0
	Pulv. op.	0 05		Acid. salicyl ..	0 5
	Pulv. ipecac. ..	0 05		Adip. to	50 0
	Sacch. lact. to ..	1 0		Make an ointment.	
	Send three such powders.		Sig.	A little to be well rubbed	
Sig.	One to be taken at night.			into the affected parts.	

℞	Liq. hydrarg. perchlor.	40 0
	Pot. iod.	10 0
	Aq. menth. pip. to	200 0
	Dissolve and make a mixture.	
Sig.	10 c.c. (a dessertspoonful) thrice daily.	

With regard to names, we need no others than *milligramme* (one-sixtieth grain) for quantities up to 50 milligrammes (our metrical grain), and *gramme* beyond this. For instance, the difference between ·2 and ·02 of a gramme (roughly between 5 grains and ⅛ grain) is more easily apprehended in speech as written (point two and point nought two of a gramme) than by saying ·2 of a gramme and 20 milligrammes. When speaking of fluids we say c.c. or ·5 of a c.c. or ·05 of a c.c. (one drop). These simplifications have made the writing of prescriptions remarkably easy for the medical student, and where he used to have time to write one or two he now writes one or two dozen.

WORKING EQUIVALENTS.

There is a difficulty still to be faced by those who have learnt doses by one system and wish to translate them. Exact arithmetic equivalents are too troublesome here—we require certain change-over points easily remembered. If we take these as follows they should be found sufficient.

1 gramme = 15 grains to serve for greater quantities.
·05 gramme = 1 grain for intermediate quantities.
·001 gramme = 1/60 grain for fractions.
5 c.c. = 1 fluid drachm (teaspoonful).
1 c.c. = 15 minims.
·05 c.c. = 1 drop.

Quantities less than a milligramme are only used for hypodermic injections.

A word may be said with regard to the peculiar difficulties to be met with by the pharmacist dispensing such prescriptions. It is much easier to weigh and measure metrical prescriptions metrically than to translate into the imperial system. Our practical classes have done the whole of their dispensing using weights of grammes and fractions and measures of 100 c.c., 10 c.c., and 1 c.c. capacity graduated. Bottles used for 2 oz., 4 oz., and 8 oz. mixtures have served without difficulty for 50 c.c., 100 c.c., and 200 c.c., mixtures respectively. But the 6 oz. bottle will be seldom if ever used in a metrical prescription. A 1 oz. bottle may be used without inconvenience for dispensing a draught of from 20 c.c. to 30 c.c.

For ointments	10	grammes	may replace	½ oz.
	20 or 30	,,	,,	1 oz.
	50	,,	,,	2 oz.
	100	,,	,,	4 oz.

I hope that this very serious attempt to lessen the burden of the medical profession in the person of the medical student, and to carry out the recommendation of the General Medical Council, will have the hearty coöperation of the pharmaceutical and medical professions, and that selfish considerations of use and wont shall not have too great an influence in determining individual members to vote for "no change."

THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITRE.[1]

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THE present surgical treatment of Graves's disease is based upon a pathological hypothesis—namely, the assumption that the symptoms of exophthalmic goitre are produced by a toxic product elaborated in an enlarged and diseased thyroid gland. That there is probably some underlying primary cause, responsible for the change in the thyroid gland itself, cannot be denied, and though there appears to be a considerable body of evidence pointing to the presence of an infective causative agent of some form, it is not my intention to discuss here in detail the underlying pathology of the condition. There is also very little doubt that the other ductless glands are involved in the process and play a certain part in the production of the symptoms; the suprarenals especially are important in this connexion, and it is quite possible that certain of the physical signs, such as the exophthalmos, are directly due to suprarenal influence. However this may be, in the present state of our knowledge, we believe that these other ductless glands are affected secondarily to, or possibly as a compensation for, the state of the thyroid, and that it is the alteration in the thyroid gland itself that is the basis of the disease.

Difficulty of Definition of Exophthalmic Goitre.

It is, however, very important in any discussion of this condition to remember that a correct definition of the term exophthalmic goitre is difficult, that between the ordinary parenchymatous goitre with no toxic symptoms, the simple thyroid adenoma with nervousness, tremor, and rapid pulse, and the well-marked case of Graves's disease with its classical syndrome, there are an infinite number of different grades of severity, and that such clinical curiosities occasionally occur, as marked toxic hyperthyroidic symptoms with no appreciable enlargement of the thyroid gland, as unilateral exophthalmos instead of the common bilateral type, or even as malignant disease of the thyroid, associated with palpitation, rapid pulse, tremor, and nervousness. I do not, therefore, regard any case as deserving of the name of Graves's disease unless it presents a certain amount of eye change, a rapid pulse, and definite cardiac changes—slight enlargement in the milder types, and considerable dilatation with alterations in the heart sounds in the more advanced cases. Moreover, in all cases in which these toxic symptoms are mild enough to raise any doubt as to whether the condition should really be called Graves's disease or not, before the diagnosis is actually settled, a microscopic examination of the gland should be made to see if the hyperplasia and changes in the epithelium, which the exophthalmic thyroid gland always shows, are present. Such conditions, therefore, as cysts or adenomata of the gland with nervousness and rapid pulse, and parenchymatous goitre in nervous women, have not been included in the series of cases on which this paper is based.

Surgical Treatment: Its Drawbacks and Value.

In recent years there has been much discussion as to the best methods of treatment of this complaint, and medical treatment, X rays, radium, ligature of the thyroid arteries, and excision of portions of the thyroid gland have each had their advocates. The last two—the truly surgical methods, aiming, as they do, at the removal or destruction of part of the secretory and toxin-producing tissues—have always been recognised as reasonable and practical methods of treatment, capable of giving very good results; and only the grave mortality that has attended these operations on cases of Graves's disease in the past, together perhaps with certain minor difficulties of technique, has deterred physicians and surgeons alike from recommending them more extensively. This opinion was expressed many years ago by Dr. Hector Mackenzie, who wrote: "Were it not for the considerable risk of life from the operation, I should not hesitate to recommend it as the most rational and practical method of treatment." We hope to show that these operations can now be performed even in severe cases, with a mortality that is not unduly great, and that they frequently result in vast improvement in the patient's health.

One operation, that of ligature of the thyroid arteries, can be dismissed in a few words as ineffective—in fact, it might well be described as the attempt of one who would like to, and dare not, remove part of the thyroid gland. It has been called "difficult and dangerous in those cases in which it is necessary, and unnecessary in those cases in which it would be easy and safe." If it has any place in surgery at all, which I rather doubt, it is only as a preliminary with a view to thyroidectomy later on.

General and Local Anæsthesia.

Until recently, when the great majority of operations for exophthalmic goitre were done under general anæsthesia, the mortality was exceedingly high; death in almost all of these cases occurred in the first 48 hours after the operation, being preceded by a rapidly rising pulse-rate, fever, great restlessness, mental delirium, and acetonuria, a group of symptoms that have been described as acute thyroid toxæmia or acute hyperthyroidism. Of recent years, however, various factors have reduced this mortality so greatly that it is now rather less than the mortality of most major surgical operations, and of 250 cases of the disease, of all types of severity, upon which I have operated, many with pulse-rates of over 180 and some with auricular fibrillation and other gross disorganisation of the heart, only six, or 2·4 per cent., have succumbed.

Nearly all of these operations have been performed under local anæsthesia and twilight sleep, with a few exceptions in which a little open ether was given; I cannot help feeling that performance of the operation under local anæsthesia has largely contributed to the low mortality; of the six cases who died, two were amongst those who were operated upon under ether. Why this method should give better results than does the administration of ether is a little difficult to say. It may be that in a patient already suffering from a serious form of toxæmia, the addition of a further toxin, ether, proves too much; but I think other accessory factors play a part in the result, one of which is that it is essential that all manipulations during this operation should be most gentle in character, and this is ensured by the fact that the patient is only under a local anæsthetic and fully conscious; and, secondly, that, quite apart from the question of anæsthesia, one has learnt that these patients with Graves's disease bear loss of blood extremely badly, and that every possible means must be taken to prevent it. Incidentally, it is of interest that five patients operated upon under local anæsthesia have developed pneumonia (to which two of them succumbed), and it would appear, therefore, that in post-operative pneumonia in general the anæsthetic is by no means necessarily the cause, and that perhaps in the past anæsthetists have been blamed unjustly for their share in the production of this complication.

Selection of Cases for Operation.

In connexion with this series of 250 cases, only two cases have been refused the chance of operation on the ground that they were too advanced for operation to hold out any chance of benefit. But there are many cases to be seen in which the symptoms are so slight that one may well wonder whether operation is really worth while, or whether other methods of treatment should not be tried first. In this connexion

[1] Being extracts from a paper read before the Lambeth Branch of the British Medical Association.

I have been fortunate to have the advice and help of Dr. Hector Mackenzie in many cases, and it has been our practice to prescribe for the very early and mild cases a course of medical treatment at first. If all the signs and symptoms of the disease are slight, and the patient has only complained of them for a few months, this medical treatment is often followed by considerable benefit, and occasionally by a complete cure, though this improvement or apparent cure is unfortunately often only of a temporary character, and relapse is common. Another aspect of medical treatment must be mentioned: in very severe cases medical treatment, in the form of absolute rest in bed, diet, strontium bromide, &c., is valuable as a preliminary to and a preparation for operation, frequently rendering the patient fitter to stand the strain of the latter. On the other hand, in moderately severe cases, or where one sign or symptom is present to any marked degree or is progressing, medical treatment, though useful as a preparation, cannot take the place of operation; for it does not lead to so marked or so permanent an improvement, and in such cases, it should not, in my opinion, be continued for more than two or three months. If the operation is undertaken reasonably early, not only is the patient in a better condition to stand it, but a better result is likely to be obtained in the end, and much time and trouble will be saved.

I would lay particular stress upon this question of time and trouble for the patient, for many cases of Graves's disease, by careful medical supervision and treatment by means of repeated long rests in bed, are enabled to carry on semi-invalid lives for long periods, whilst were they to undergo surgical treatment early in the complaint, their return to health would come very much sooner and be much more complete. In many cases in this series the question of operation was not raised in the early stages of the disease, and it was only considered by the patient when her condition had become so serious that the risk of operation had to be balanced against the benefits that might follow its performance. However, the operation mortality has now proved to be so small that the risk may very justifiably be run in an attempt to obtain a cure for a disease of so serious a character. In mild cases I do not think that there are any actual contra-indications to operation, other than independent gross constitutional disease, but there is always the question as to whether the disease is sufficiently severe to warrant exposure of the patient to the discomforts and expenses associated with an operation. In the more severe types we have before us a large number of signs and symptoms for consideration, and I do not consider that irregularity or great rapidity of the pulse, even up to 200, marked cardiac dilatation or fibrillation, presence of diarrhœa and vomiting, marked loss of weight, or of acetone in the urine, in any way contra-indicate operation, done under a local anæsthetic, provided that the mental condition of the patient is moderately good, and provided still more that she is willing and anxious to have the operation done.

Definite Contra-indications.

This last point is of importance, and operation should not as a rule be urged in cases in which the patients are very unwilling to undergo it, for this type of patient does not seem to derive so great a benefit from the procedure as does one who is anxious to have it done; although a rather surprising feature of the disease is that these nervous and hypersensitive patients, especially the very severe cases, are frequently most anxious to undergo operative treatment—sometimes more anxious than the surgeon is to undertake it. Nervousness and emotional instability are, of course, nearly always present, and even though these are very marked they do not constitute any bar to operation, but if mental symptoms of a maniacal, delusional, or melancholic type are setting in, operation does not appear to hold out a reasonable prospect of improvement, and may, in fact, make the patient's condition worse than before. One is occasionally asked to see, with a view to operation, patients who are, to all intents and purposes, certifiable lunatics, and who have enlarged thyroids (often with other signs pointing to Graves's disease), but thyroidectomy, needless to say, is not likely to benefit them. Five patients of this kind, with more or less marked signs of Graves's disease, and delusions, suspicions, or melancholia, I have treated by implantation of radium; two of them are no better, one is much improved, and the other two appear at present to be quite well. It is, however, too early to feel certain that the radium is responsible for this, but it appears to be quite worth while to use it again in similar cases. There are other associated conditions which entirely negative operation, and these are as follows: An age over of 65, the presence of diabetes or other gross constitutional disease, great fear or unwillingness to undergo operation, and the presence of œdema due to a failing heart. As is well known, the majority of sufferers from this complaint are women, and I consider that they derive more benefit from the operation than do the male sufferers.

The Operation.

There is now a consensus of opinion among surgeons, which is shared by many physicians, that removal of large portions of the thyroid gland is the procedure of choice, for though we do not know the primary cause of the disease—that cause which leads to the enlargement of the thyroid—there is abundant evidence that the enlarged thyroid is what we may call "the factory of the symptoms," and by reducing its activity we can relieve these symptoms and render the patient a normal individual again. The question as to which form of anæsthetic is preferable for these operations has recently given rise to much discussion. That chloroform is highly dangerous to patients suffering from thyroid toxæmia there is little doubt, and if general anæsthesia is to be given at all it must consist of ether, and as little ether as possible. Ether, given by means of the intra-tracheal tube, is convenient for both surgeon and anæsthetist, in all operations about the head and neck, but in exophthalmic goitres these advantages are apparently outweighed by the facts that (1) a considerable depth of anæsthesia is required at first in order to pass the catheter into the trachea, and (2) the passage of this catheter entails a certain amount of manipulation of the neck, while the less manipulations there are throughout this operation the better. For these reasons I think that ether, if used at all, had better be given on an open mask. Though the milder cases can be operated upon safely under open ether, rectal ether, or gas and ether, the severe cases are subjected to a much smaller risk under local anæsthesia. Gas and oxygen, which theoretically should be an ideal anæsthetic for this operation, is not so in practice, as the apparatus used is liable to get in the way of the surgeon, and often produces considerable venous congestion in the neck.

In almost all my cases the operation has been performed entirely under local anæsthesia, usually with preliminary injections of morphia and hyoscine, the anæsthetic being injected into the neck half an hour before the operation. A full account of the operation technique has been given by Mr. S. H. Rouquette[2] and Dr. T. P. Dunhill,[3] and the method employed in this series has only differed in slight modifications, but I should like to lay stress on the advantage of giving these injections of morphia and hyoscine (in comparatively large doses) before the operation. Many of the patients are highly sensitive, nervous, and jumpy, and although it is quite possible to do a thyroidectomy for them without the preliminary injections, the administration of the morphia and hyoscine undoubtedly saves them a great deal of fright and anxiety, and in most cases effectually wipes out any memory of the ordeal they have been through. Certain authorities are opposed to this use of morphia and hyoscine before the operation,

[1] THE LANCET, 1918, ii., 776.
[2] British Journal of Surgery, 1919.

on the ground that by affecting chiefly the higher controlling cortical centres they may only succeed in doing away with the patient's powers of self-control, without in any way calming her fears, but I have not found this to be the case: not infrequently the patients will talk, cry, or even pray during the operation, but afterwards they will say that they have no recollection of the procedure at all, while one and all agree that the prick of the needle while the local anæsthetic is being injected is worse than the actual operation itself. An important supplement to this use of morphia and hyoscine is absolute quietness in the operating room: two hours before the operation (at the time that the first injection of morphia is given) the patient is placed in a quiet dark room, her eyes bandaged, and her ears plugged with cotton-wool, while during the operation itself the theatre is kept as quiet as possible. In many of the milder cases—namely, those which can be operated upon equally safely under either ether or local anæsthesia—it has been my practice to ask the patients whether they prefer the local or the general anæsthetic, explaining the details of each to them, and many of them, especially women, choose the local in preference to the general method. Men, on the other hand, do not usually choose the local anæsthetic, and do not tolerate it so well as women. As a rule, the only complaint during operation is of a little tickling or choking sensation when the trachea is pulled upon; still more rarely the patient says that she feels pain in the lower teeth when the superior thyroid artery is tied and cut.

Amount of Gland to be Removed.

Another exceedingly important consideration in connexion with these operations is the amount of gland tissue that should be removed. It cannot be too strongly laid down that removal of one thyroid lobe (hemithyroidectomy) is hardly ever sufficient completely to cure a case of Graves's disease, and that if a permanent cure is aimed at, it will be necessary to remove one lobe, the isthmus, and a sixth, a third, or even a half of the opposite lobe, according to circumstances. It is usually feasible to do all this at one operation, but occasionally—where the gland is abnormally adherent (or after previous X ray treatment), or where the patient is desperately ill—it has to be done in two separate stages, one lobe being removed at the first operation, while later on a portion of the other lobe is excised. Removal of one lobe will always produce considerable improvement, but it is not the best that can be done, and hardly ever cures the symptoms: if it be possible to express so tangible a quality as "improvement" as a mathematical expression, it may be taken that removal of one lobe will produce about a 60 per cent. improvement, while subsequent removal of a third or a half of the other lobe may produce a further 30 per cent. of "improvement." There have been many cases in the past in which one lobe, or even more, of the thyroid gland of an exophthalmic patient with a large goitre has been removed, and yet the patient still has left in the neck, after the operation, thyroid tissue in amount far greater than that of the normal gland. How can this possibly produce a cure? It is therefore all-important to remove sufficient gland tissue, and provided that a piece the size perhaps of one normal thyroid lobe is left in the neck, one would theoretically like to remove all the rest. The practical limit to the amount that can be removed is, of course, set by how long or how severe an operation the patient's condition is equal to, for a long thyroid operation, especially if done under local anæsthesia, is undoubtedly a strain upon both patient and surgeon. Thus it is not always possible to remove quite as much thyroid tissue at a sitting as one would like; the necessity for a second operation may then arise. The danger of leaving too little thyroid behind in the neck is not real—for exophthalmic thyroids are curiously liable to have outlying nodules and large lobes projecting behind the larynx on both sides, and there is probably always more thyroid tissue left in situ than would appear, even after extensive removal. Moreover, quite a small quantity of "toxin-secreting" gland tissue—that is to say, of that peculiar gland tissue present in Graves's disease—seems to be sufficient to keep off any symptoms of myxœdema, and to preserve the normal thyroid balance of the body. One cannot leave the question of extensive removal of thyroid tissue without some reference to the parathyroid bodies and their supposed association with tetany. That tetany occurs in human beings after gastric operations is well known; whether it ever occurs after thyroid operations is very doubtful. I know of no surgeon who has had a case of real tetany after thyroidectomy, and it seems that in the performance of the operation the parathyroids may be completely ignored.

It is the practice of some surgeons when performing thyroidectomy to leave in situ shavings of the posterior surface of the gland in the neighbourhood of the inferior thyroid artery, with a view to protecting the recurrent laryngeal nerve; but this should not be done, at any rate, when dealing with cases of Graves's disease, for these small portions of gland tissue left behind are capable of and do undergo growth and hypertrophy, and later may increase to such a size that their internal secretion is sufficient to cause a recrudescence of the symptoms and a failure of the operation; it is therefore of the greatest importance that the gland should be cleanly dissected out and no outlying shavings left behind. This also applies equally to that stage of the operation when the superior thyroid artery is being tied and cut; this must be done cleanly above the gland, and portions of thyroid tissue should not be left on the stump of the artery, though it is tempting to leave them when the superior thyroid pole lies high up in the neck and is difficult to reach. The retrolaryngeal lobe should also be removed, at least on one side. The recurrent laryngeal nerve, which divides up into branches some little distance from the larynx, is at times very closely incorporated with the gland substance, and damage to this nerve may be a most serious accident for the patient. Apart from being cut or tied in a ligature, the nerve is remarkably sensitive to handling, pinching, bruising, or stretching, but it should not be in danger if the wound is kept dry and the dissection carried out with a blunt instrument kept close to the gland substance. The gland is usually tightly adherent to the trachea at one point in front, and though a blunt instrument has been used to separate it at the sides, the scissors will nearly always be necessary to effect the separation from the front and central portion of the trachea.

Repeated Operations.

In this series of cases a second operation has only been necessary in eight instances, and a third in two; while the larger of the two lobes has always been the one to be first removed. It is striking how rarely the left lobe is the larger of the two; and thus in a very large proportion of the patients the operation performed has consisted in removal of the whole right lobe, the isthmus, and a portion of the left lobe. There is no need to lay stress on the special difficulties of this operation—the true exophthalmic gland has outlying lobes and nodules, and is very hard, exceedingly vascular, friable, and adherent; this may render very difficult the process of dislocating the lobe and lifting it up to separate it from the trachea; while the patients, if the disease is at all advanced, stand loss of blood very badly, and every effort must be made to diminish hæmorrhage. The veins are usually more troublesome than the arteries, as in all branches of surgery, and though the local anæsthetic has the effect of making the superficial tissues avascular, it has no such effect on the deeper ones, while the fact that the patient is not unconscious makes a hæmorrhage, should it occur, more difficult to deal with.

After-treatment.

The after-treatment needs little comment. A fine tube is left in through a separate incision for 24 hours for the large quantity of anæsthetic and any oozing there may be to escape through, and the skin sutures

(of the finest salmon-gut) are all removed in 48 hours. By this time the wound has completely healed, and this early removal of the stitches ensures that they leave no marks in the skin. I regard the insertion of this tube as being of considerable importance, for not only is there a large quantity of local anæsthetic to come out, but a considerable amount of thyroid secretion may be loose in the wound, and this will also find its way out through the tube. The patients are made to sit almost completely upright in bed, and allowed anything cold by the mouth that they can swallow—for 48 hours it is usually only fluids; hot drinks appear to have a tendency to excite hæmorrhage and are better avoided. The inside of the throat and larynx often appear to be sore and husky; to ease this condition a special tincture, prescribed by Dr. Mackenzie, is useful. It consists of—

			Metric.
℞	Atropin sulph.	gr. $\frac{1}{100}$	0·0006
	Morp. hydrochlor.	gr. $\frac{1}{4}$	0·02
	Apomorph. hydrochlor. ..	gr. $\frac{1}{2}$	0·01
	Syr. limon.	ʒi.	5·0
	Aq. chloroformi	ad ʒi.	30·0

Sig. ʒi. 6 times in 24 hours.

But, as a rule, after 48 hours all discomfort passes off. A long stay in bed and four months of very easy life are essential parts of the treatment, for the patient often thinks that the moment she has recovered from the operation she can resume a normal life; but, in fact, the ensuing four months are a period during which special care is needed and absolute rest well repaid.

Results of Operation.

Now it may well be asked, "What are we to expect from this operation in the way of improvement," and the first question that the patient will ask is probably about the mortality. A mortality of 2·4 per cent. is not, I think, unduly high, when dealing with so serious a complaint; this disease leads inevitably to prolonged and often very serious ill-health, and gives rise to symptoms which are most unpleasant to the patient and even to her friends—especially the incessant palpitation and rapid action of the heart, the nervousness, jumpiness, and the sleeplessness; moreover, in many cases, especially in women of over 40, it leads to gross disorganisation of the heart and to death. It is without doubt justifiable to run a small amount of risk in an attempt to cure so serious a condition. Nevertheless one cannot help regarding all patients with a certain amount of anxiety for the first two or three days after operation. Of my six patients who succumbed, two died of pneumonia within the first four days, and the other four within 60 hours of the operation with the symptoms of what one is accustomed to call acute hyperthyroidism. After three or four days, therefore, any danger of death would seem to be over. Following the operation there usually appears to be an improvement more marked and rapid in subjective symptoms than in physical signs, and patients often look and feel much better within a few days of the thyroidectomy; it is often not for a month or so that really marked improvement in the physical signs sets in. This improvement in subjective symptoms often disappears after a few weeks, when the patient goes back to her own home but reappears later as a permanency in two or three months, and is then accompanied by marked improvement in the physical signs.

As a rule, after three or four months we find that patients who have had an adequate amount of thyroid gland tissue removed feel well, eat well, sleep well, and can do their day's work, though I do not think it wise for them to recommence their normal life quite as soon as this. Though they look and feel well and put on weight, on examination it is frequently found that the pulse-rate, though very much slower than it used to be, has not quite come down to normal and remains between 80 and 90, and that the cardiac dilatation, though very much less, has not quite gone. Irregularity of the pulse, acetonuria, and diarrhœa if previously present, almost invariably disappear, the nervous excitability, tremor, and jumpiness are very much improved, but the exophthalmos, though much less marked than before operation, rarely if ever vanishes completely. Those patients who receive surgical treatment for the condition comparatively early in its course—that is, before they have developed the gross degenerative conditions of the myocardium and other viscera that set in sooner or later—should all, if a sufficient amount of thyroid tissue is removed, become perfectly well—in the sense that they should be able to lead a normal life, do their ordinary work, and sleep the sleep of the just. On the other hand, it is no use pretending that operation on a case with a grossly dilated and fibrillating heart, and advanced myocardial degeneration, will ever make that heart perfect again, although it will make it very much better. In this connexion one patient, having had severe Graves's disease for nine years, came to see me with a heart so irregular and dilated, and was so short of breath that not only could she barely walk across the consulting-room, but I was really afraid she was going to collapse on the spot. With considerable diffidence, and mainly because she was so anxious to have it done, I performed a thyroidectomy on her; and she writes now, just a year after the operation, that she is going for long country walks and playing golf. Palpitation and shortness of breath, two symptoms especially unpleasant to the patient, usually show the greatest amount of improvement.

Conclusion.

As regards the effect of the operation on the loss of weight, which is often so serious a feature in a bad case, the gain of weight following operation is nearly always marked, and may even become embarrassing! One patient, a trained nurse, who having been thin and unable to work at all before her operation two years and a half ago, has now put on 3 stones in weight, and is doing her full work, came a short time ago to ask me to take steps to reduce her weight again.

Another very satisfactory feature about this branch of surgery is that, as a general rule, the bad cases appear to derive more improvement from and to be even more pleased with the results of the operation than do the slighter cases.

As in other diseases, it is difficult to compare and contrast the results of treatment by merely observing symptoms and physical signs, and it is therefore satisfactory to find that there now appears to be a method by which one can attempt to measure what we may call the "physiological fitness" of these patients, before and after operation. My friend, Dr. Gardiner Hill, has been examining many of these cases and estimating their basal metabolic rates before and after operation; before operation they are nearly always 40 to 80 per cent. above that of the normal individual, this presumably representing increased tissue metabolism as a result of the hyperactivity of the thyroid. After the operation, these rates fall, within a few weeks, to amounts varying from normal to +25 per cent. above normal, and this appears to be a fixed method of estimating the "physiological improvement." There have so far only been two or three cases in which, after operation, this basal metabolic rate has fallen slightly below normal, to amounts varying between −5 and −10 per cent., and these patients have not up to the present shown any signs clinically of hypothyroidism.

The following are three cases, illustrative of the disease in a severe form, and of what the result some time after the operation may be:—

CASE 1.—Female, aged 56. History of two years' large, firm, prominent goitre. Exophthalmos very marked. Pulse-rate 160–180. Heart's apex beat three inches outside left nipple line. Had gone down in weight from 10 st. to 6 st. 5 lb. She was kept in bed for some weeks with a fattening diet of cream, butter, &c., and every attempt made to get her weight up. But during this time it went down further to 5 st. 6 lb. Acetone was present in the urine. At times melancholic symptoms and rambling at night were present. The right lobe and one-third of the left lobe were removed. After the operation there was no more melancholic or wandering at night, the patient put on a stone in five weeks, and is now walking about and working in her garden.

CASE 2.—Female, aged 37; 21 months' history. Very thin and emanicated, exophthalmos very marked. Pulse 170, heart's apex beat one and a half inches outside the nipple line. Unable to keep still for a minute, and very short of breath. The right lobe and a quarter of the left lobe were removed two years ago. The pulse rapidly dropped to 80. Eight months after the operation she was going to dances, and when last seen a few weeks ago she was going to Paris for a fortnight.

CASE 3.—Female, aged 21; 10 months' history. Eyes exceedingly prominent; pulse 190. Very nervous and thin. Frequent attacks of diarrhœa and vomiting. Large, hard goitre and apex beat two inches outside the nipple line. Right lobe and a quarter of left lobe removed 18 months ago. The pulse dropped to 100, and later she started work again as a cashier. She did not feel up to it, and a few months later came and asked if a further operation would not make her better still, and she said she was anxious to have it done. A further one-third of the left lobe was removed, and she is now doing her full work with a pulse of 80–90.

Harley-street, W.

THE ÆTIOLOGY OF GOUT.*

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IN the ætiology of gout both intrinsic and extrinsic agencies are involved. Of the intrinsic, the most salient is heredity. That gout is hereditary is beyond question, but whether purely so or capable also of acquisition de novo is uncertain. Certainly of all arthritic diseases gout furnishes by far the most instances in which parents and children are alike victimised.

The Inherited Predisposition.

Thus Garrod, Roberts, and Luff in private patients found an ancestral taint in from 75 to 81 per cent. Albeit they maintain that gout can be acquired de novo, though the evidence adduced is negative rather than positive, based mainly on failure to establish any ancestral tendency. But seeing that they elicited an hereditary influence in three-fourths or more of their cases, it appears to me more probable that the same taint—though apparently undiscoverable—was at work in the residual fourth. My own opinion is that the predisposition to gout is always inherited, and that the factors we presume may originate gout are merely evocative, not causative. In other words, the primary or essential cause of gout is an inborn morbid tissue potentiality, in the absence of which the alleged predisposing or exciting causes are impotent to evoke the disorder.

The presumption that gout is purely hereditary gathers weight when we recall that its metabolic eccentricities relate to nuclein rather than protein metabolism. For it is in nuclear changes that we may best discern the initiation of oxidation processes and other varieties of enzymatic activity.

Do not the anomalies of excretion and deposition of uric acid also seem to predicate inherited nuclear peculiarities with their correlated perversions of function? That such constitute the pathological groundwork of gout is, I think, further indicated by the fact that so-called gouty inflammation—in virtue of its associated uratic deposition—is sui generis. No tissues other than the gouty react in this specific fashion. Does not this seem to indicate that the soil dictates, so to speak, the character of the pathological reaction, whatever the nature of the so-called predisposing causes which—if my assumption be correct—do but evoke or make manifest what is already latent?

The Nature of the Morbid Potentiality Transmitted.

Assuming that gout be purely hereditary, what is the nature of the morbid potentiality transmitted? Some define it as an inborn defect or alteration of protein or nucleoprotein metabolism. But pending more exact knowledge I would by preference ascribe it to an inherent instability thereof. Instability predicates excessive or abnormal response to normal stimuli, and judged clinically the salient characteristic of the gouty is hypersensitiveness. Nowadays persons who exhibit idiosyncrasies towards foodstuffs, &c. are regarded as anaphylactic thereto; much of the recent research on anaphylaxis centres around asthma, a disorder whose kinship with gout is traditional.

Now, protein sensitisation being, so to speak, the live link in asthmatic heredity, is it not highly probable that the hereditary transference of gout also connotes the transmission of a tendency to nucleoprotein or rather protein sensitisation? I say protein because researches show that any antigenic properties that nucleoproteins possess are referable to their protein and not their nuclein moiety. I have the less diffidence in making this suggestion in that more often than not gout develops on a soil already sensitised, as betokened by the fruit already borne in the shape of asthma, urticarial and eczematous eruptions, or some one or other of the toxic idiopathies now known to be due to protein sensitisation. Is it not highly probable that arthritic gout is but another clinical variant thereof?

The suggestion gathers weight when we recall the many clinical analogies between gout and asthma. Thus both disorders are paroxysmal and periodic, prone, moreover, to clinical interaction and alternation, and their victims notably given to idiosyncratic reactions. The resemblance goes even deeper, for de Kleijn and Van Leeuwen have recently noted that bronchial asthmatics exhibit the same disturbances of purin metabolism met with in gout—viz., retention and delayed excretion of exogenous purins. Moreover, Czerny, Paltauf, and others claim that the children of gouty stock are especially liable to a symptom-complex marked by asthma, cyclical vomiting, vaso-motor ataxia, and eosinophilia. The asthma may alternate with urticaria and eczema, and moreover, as Uffenheimer emphasises, these children again display the same disabilities of purin excretion as their gouty parents.

Food Idiosyncrasies.

Duckworth observed that the food idiosyncrasies of the gouty often began in early life and later might die out and be replaced by other idiosyncrasies. Recent studies on protein sensitisation strikingly confirm these observations. The sensitiveness which in infancy finds expression in eczema may later be exchanged for sensitiveness that manifests itself in asthma, and as I think may later still in life take the form of regular gout. For if it is true that many cases of asthma beginning in early life date from the suppression of an eruption it is equally true that an asthmatic paroxysm has vanished with the onset of frank gout and that thereafter the gout has alternated with asthma, or with eczema, or with urticaria. Herein may lie the explanation of the hitherto inexplicable interplay of regular and so-called irregular or abarticular manifestations of gout. In other words, that these various disorders, superficially so dissimilar, are but multiple expressions of one species of morbid action.

The food idiosyncrasies of the gouty are proverbial, not eclipsed even by the asthmatic. Some appear hypersensitive to beef, others to pork or veal, some to shellfish, others to certain vegetables or fruits—e.g., strawberries. The almost fulminant swiftness of the response in some instances suggests that the gouty outbreak is due to the absorption of unaltered protein, and, moreover, the digestive derangements of the gouty would seem to favour the intrusion of unaltered protein or cleavage products. Here I would protest against the belief that the idiosyncrasies of the gouty relate chiefly, if not entirely, to nuclein-rich foods. Sweetbreads, it is true, in some evoke outbreaks, but others take them with impunity. In short, the response of the gouty to a purin-free diet is undeniably erratic, which is not surprising, seeing that it was based on the assumption that uric acid was the fons et origo mali in gout. We now realise that the uricæmia and uratic deposits are but symptomatic of gout, the outcrop,

* Opening paper of a discussion on the Ætiology of Gout held at the Section of Balneology and Climatology of the Royal Society of Medicine on Feb. 23rd, 1922.

so to speak, of some more profound metabolic disturbance.

In my opinion, the salient point is whether the diet, independent of its purin content, contains the specific protein or proteins to which the particular gouty individual is hypersensitive. Only on this more catholic basis can we hope to cope with the food idiosyncrasies of the gouty, which extend far beyond nuclein-rich foods. For example, strawberries are purin free; some gouty, like some asthmatic subjects, are hypersensitive thereto, whereas many others can eat them with impunity. The inference, then, is that some gouty persons are hypersensitive to the particular protein in strawberries, others not.

The fact that purin-free proteins, such as gliadin, or their derivatives, markedly intensify nuclein metabolism, furnishes, I think, a clue to the food idiosyncrasies of the gouty. Incidentally, the increased nuclear katabolism might account for the tendency to uricæmia, the degree of which has possibly some bearing on that more salient feature of gout uratic deposition.

Other Factors.

Lead.—Not only may the most diverse proteins apparently evoke gout, but wholly alien substances such as lead, exposure to X rays, and infections. Surely nothing could more clearly demonstrate the abnormal or specific instability of the gouty.

Alcohol.—Sir Clifford Allbutt and Le Gendre hold that alcohol per se cannot originate gout, and the latter suggests that "something" in wines or beers has eluded us, some associated substance. Malt liquors which contain purins and wines which are held purin-free are equally provocative of gout. The inference is that those who develop gout after beer are hypersensitive to something in beer other than its alcohol or purins; I suggest that it may be to hordein or some other protein in malt. I single out hordein for—like gliadin and other vegetable proteins—it produces a typical anaphylactic reaction. Another possible source of sensitisation might be the protein material in yeast cells, for dry yeast contains 50 per cent. of nitrogenous substances, proteins, peptones, &c. As to wines, if as has been stated by Julius Wortmann living yeast cells are always present, even in old wines in good condition, is it not possible that those who develop gout after their consumption are hypersensitive to one or other of the proteins contained in the different races of yeast cells? Apart from this, we know that in the process of fining wine protein substances are actually added, in white wines sometimes casein and skimmed milk, while red wines are often treated with white of egg. I suggest, then, that the wine idiosyncrasies of the gouty are due to protein sensitisation—either to proteins developed during fermentation of the grape must or added subsequently in the process of fining.

Occupations.—In predisposed persons exposure to lead may evoke gout, and this by several routes—ingestion, inhalation, or absorption. However, it is a strange thing that if we meet with gout in a lead worker we impeach the lead and not the beer which he may, and often does, drink. On the other hand, if we meet with gout in a maltster or drayman, it is ever and always the beer he drinks. But not all publicans are sinners.

Wilson Fox has noted that some persons, when exposed to lead fumes, developed not gout but asthma, and so we have this same metal lead evoking in one individual gout and in another asthma. Now, cereal proteins we know may by inhalation or absorption in some persons induce asthma, then why should they not, in other instances, like lead, evoke gout, and this by direct contact? We admit that sensitisation with resultant asthma is especially prone to ensue when, as in millers or others, the protein comes into direct contact with the conjunctival, nasal, or respiratory membranes. Is it not possible, then, that the so-called "gouty" throat is the outcome of sensitisation by direct contact of the proteins in malt dust or yeast spores? If so, it would readily explain why a so-called "gouty tonsillitis or pharyngitis, or according to many a conjunctivitis or epi-scleral congestion, so frequently and immediately precedes a classical outbreak.

I would suggest, then, that the predominant incidence of gout in the leadworkers, maltsters, draymen, ostlers, and so forth, is that those who develop the disorder are sensitised. Moreover, that such sensitisation may be but is not necessarily the outcome of the ingestion of beer. But, that being in the course of their work, exposed to the corresponding protein or antigen, sensitisation, as in asthma, may occur by the alternative routes of inhalation or absorption; of the proteins of malt dust in brewing or malting; or of the proteins in crushed oats, wheat, &c., in stable and agricultural work. Some deep ætiological significance, I feel sure, attaches to the fact that not only do these two conditions, gout and asthma, so frequently overlap clinically, but that the trades also in which they predominantly occur should alike be concerned with the handling of cereal grains or their manufactured products. Lastly, there is some evidence that even such widely divergent substances as lead and proteins act after a somewhat similar fashion, for, though non-proteins like lead may not sensitise, I suggest that they may combine with or alter the proteins of an animal so that they become as foreign proteins to that animal, and so cause sensitisation.

Trauma.—Fractures, dislocations, and surgical operations have often determined gouty outbreaks. Now, our experience of war casualties suggests that in extensive traumatisms the products of tissue autolysis may engender grave intoxications or conditions sometimes interpreted as "shock." Researches on animal anaphylaxis seem to show that it is especially the slightly altered proteins, possibly only changed in their colloidal properties, that are most probably responsible. But apart from extensive traumatisms, even trivial shock, such as extraction of a tooth or vaccination, have determined outbreaks. In one case under Munro and myself the initial attack occurred between two injections of typhoid vaccine. Unfortunately, I have neither seen nor read of any instances in which gouty patients have exhibited extreme hypersensitiveness towards horse serum. Lastly, in olden days leeching in gout was common. But it was found to lead to fresh outbreaks and so abandoned. Is it not possible that the outbreaks were due to sensitisation to a foreign protein derived from the leech? Such, too, might be the explanation of Heberden's classical instance, where he said he verily believed the attack had been excited by a gnat bite.

Mental Strain or Shock.—The potency of such in evoking gout is historical, but its modus operandi obscure. But in light of Pavlov's researches, there is no doubt as to the inhibition of gastric secretions by unpleasant psychic stimuli. In view of this, it would seem probable that sudden mental shock or prolonged anxiety through the sequential gastric derangements might favour the intrusion of unaltered proteins or cleavage products, and in this way cause sensitisation.

Influence of Seasons.—The liability of gout to occur in the spring has been known since the days of Hippocrates. According to Hamilton, during springtime alone the blood of sheep affords a good culture medium for the bacillus responsible for chorea paralytica. At other seasons the blood is not only inimical to its growth, but intensely bacteriolytic thereto. Is it not possible also that in man the protective mechanisms of the blood are lessened at particular seasons?

Influence of Infections.

It has long been recognised that disorders we now know to be infective frequently determine gouty paroxysms. The so-called irregular or abarticular manifestations of gout are not easily accounted for on the infective theory, but the difficulties seem minimised if we take the view that focal infections evoke gout through the medium of anaphylaxis. In other words, that the articular and abarticular phenomena of gout are due not to the direct action of toxins generated by organisms in some local focus, but that they are the outcome of an anaphylactic reaction to the proteins of the said organism. H. H. Dale believes

that the salient features of anaphylaxis are due to one common type of poisoning, and he points out that these same symptom-complexes may be produced by a whole group of natural poisons, partial cleavage products of proteins formed by bacterial or other ferments.. I contend that if in man there occurs an entry into the blood of unaltered or incompletely digested proteins—a definite interval—then a second entry with resulting explosion, the salient features of anaphylaxis may be reproduced, and may find clinical expression in asthma, skin eruptions, arthropathies, vascular hypotension, and eosinophilia. In some individuals urticaria, in others bronchial asthma or arthropathies may be the predominant manifestation.

The varied clinical phenomena of serum sickness or anaphylaxis in man seem very reminiscent of gout, in its regular and irregular aspects. In both, we have joint swellings, asthma, skin eruptions, and I think the resemblance extends even to the vascular hypotension and eosinophilia. Contrary to the prevailing impression, in gout the blood pressure is not always raised, and eosinophilia has been noted in gout by several observers.

Arthropathy or Arthritis?

Classical articular gout, to my mind, represents the very acme of idiosyncratic response, if only by reason of the fact that no other articular disorder is associated with uratic deposition. That we should exclude regular or articular gout from the toxic idiopathies is the more remarkable in that arthropathies are among the most common features of the anaphylactic symptom-complex as portrayed in serum sickness. Moreover, it is generally held that the joint pains and swellings of serum sickness, like the urticarial and œdematous lesions, are due to poisoning of the capillary endothelium. Hence, presumably, the reason why they are generally referred to as arthropathies rather than arthrites, and I believe that in like fashion the joint swellings of gout would be more fittingly described as arthropathies than as arthrites. The premonitory symptoms of gout distinctly suggest that the primary morbid change in oncoming gout is a disturbance of the circulation and not an arthritis, though, of course, the subject of articular gout is not immune from other forms of arthritis. He often has acute rheumatism in early life, and at a later age develops acute gout and either before or after this he may have suffered with acute gonococcal arthritis. Nevertheless, these alien joint disorders, despite the gouty soil, remain true to type. This shows that the joints of a gouty man—when exposed to the direct action of microbes or their toxins—do not necessarily or invariably respond with an uratic arthritis. The inference, then, to my mind, is that for the production of a true gouty or uratic arthritis there is required not only a specific gouty soil, but an equally specific mode of pathogeny. In other words, that a so-called gouty arthritis is not—as in gonococcal or other types—due to the direct action of microbes or their toxins, but is achieved indirectly through the medium of some special morbid mechanism.

The Analogy with Endothelial Poisons.

If we consider Dale's views[1] on the action of an endothelial poison (histamine) in connexion with the elucidation of the course of acute gout in the toe, we find a ready explanation of the premonitory symptoms, the coldness, numbness, muscular cramps, and venous turgescence—viz., that they are due to restricted arterial supply and venous stasis. Moreover, these occurring in a localised area such as the toe, we get the familiar redness, swelling, and œdema. The pain and certain other symptoms could be attributed to local ischæmia. As to the associated uratic deposits, even in gouty subjects there is, as far as we know, no interference with the orderly sequence of enzymatic reactions eventuating in uric acid. But here comes the flaw, the uric acid, when formed, fails of transport and elimination. It is precipitated and anchored in the tissues, and I note that Sir Clifford Allbutt holds that uratic deposits never occur in sound tissues, cartilage or other. I would suggest then that as a result of local ischæmia the cartilage undergoes anæmic necrosis, with secondary uratic deposition in the connective tissue laid down in its place. Wells states that during autolysis the intracellular enzymes attack the protein group of the nucleo-proteins, setting free the nucleic acid. These in turn are disrupted by the specific enzyme nuclease liberating the purin bases which again undergo further disruption. May it not be, then, that the uratic deposits are due to the inadequate removal of the substances resulting from these local nuclear activities, and that the relatively high sodium content of cartilage determines the incidence of uratic deposits therein? Moreover, as serum inhibits the action of intracellular autolytic enzymes, it follows that with restoration of the free circulation the tissue autolysis ceases.

In attempting to summarise my views on this vast subject, the ætiology of gout, I would remind you that Dale holds that sensitisation—in anaphylaxis—is cellular and not humoral in location. In other words, that in vascular endothelial poisoning the anaphylactic symptoms are not due to collision of the antigen and antibody in the blood-stream. For his researches show that the antibody is located in the cell, and that it is there in the cell body itself that the reaction with the corresponding protein or antigen occurs. Hence the anaphylactic symptoms—possibly the result of intracellular precipitation. On this basis the pathological groundwork of gout resides in a tendency to cellular sensitisation. The same may remain latent, but once established, it will, given contact with the related protein or antigen, at any moment explode. The explosion takes the form of vascular endothelial poisoning, and as the same operates through the medium of local ischæmia and venous stasis, it is not surprising that the clinical manifestations thereof should be extremely diverse. For the symptoms will naturally vary with the regional distribution of the circulatory stasis, and the structure and function of the organ or tissue implicated. If located in a joint it results in regular gout; if in the lung, asthma; if in the skin, urticaria, or eczematous eruptions—viz., irregular gout. Accordingly, if we accept cellular sensitisation as the basal pathological change in gout, and that the same achieves its malign effects through vascular endothelial poisoning, we seem to glimpse the inward meaning of the clinical mosaic presented by the regular and irregular manifestations of gout. Incidentally, too, much of the mystery attaching to gouty metastases disappears, even the much maligned retrocedent gout becomes intelligible. Thus, if an acute gout in the toe suddenly abort, and alarming gastric symptoms as suddenly ensue—viz., intense abdominal pain, collapse, vomiting, sometimes of blood—may not these gastric symptoms be due to a local endothelial poisoning, a gastro-stasis? Conversely, in those authentic instances where an aphasia, an amnesia, or a hemiplegia, disappears with the onset of frank gout, may not the cerebral symptoms be due to temporary stasis in the related cortical vessels?

Lastly, it seems to me that this conception of the ætiology of gout opens up an encouraging vista for more efficient and, I would fain add, more scientific therapy. May not skin protein tests, if applied to the gouty, yield as rich a harvest of information as has already been gleaned in asthma? May not withdrawal of the offending protein, whether vegetable, animal, or bacterial, prove as prophylactic in the one as in the other? May not our sheet-anchor, colchicine, even act as a desensitiser? But time and discretion alike forbid that I wander further in the regions of speculation.

Summary.

1. Gout is purely hereditary.
2. A tendency to cellular sensitisation is the pathological groundwork of the disorder—viz., latent gout.

[1] Dale, H., and Richards, A., Jour. of Physiol., 1918–19, p. 385. According to Dale, in endothelial poisoning we get vaso-constriction of arterioles with vaso-dilation of venules and capillaries—i.e., restriction of inflow of arterial blood and stasis in venules and capillaries. In acute classical gout thrombosis of veins leading from affected joint area has repeatedly been observed.

3. The gout is evoked by the corresponding protein or antigen, whether animal, vegetable, bacterial, or other.

4. It exerts its effects through the medium of vascular endothelial poisoning, with tonus of unstriped muscle, especially the bronchioles.

5. The same finds its clinical expression in the regular and so-called irregular manifestations of gout.

ESTIMATION OF PHYSICAL FITNESS

IN TERMS OF THE RESPIRATORY MOVEMENTS OF THE SEVERAL REGIONS OF THE CHEST.[1]

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WHEN examining the capacity of school children to withstand the pressure of a course of indoor study prolonged over several years, such as is involved in preparing for matriculation or other entrance examinations to universities or professions, it is necessary to have some tests of physical fitness other than the mere negative ones which reveal gross organic lesion of bodily organs or serious sense deficiency. The Board of Education has organised the curricula of State-aided secondary schools with a view to inducing a large proportion of adolescent boys and girls to complete a three to four years' course of preparation for these various standardising examinations; but its authorised system of medical inspection of public elementary schools, now extended to many secondary schools, does little but reveal actual disease and gross organic defect. It does not attempt to establish standards of nutrition or even bodily growth, such as has been done in America and on the continent. Consequently we do not in this country possess any exact standards of health for measurement of the power of school children to withstand the fatigue of a prolonged course of indoor training, nor can we scientifically and physiologically test the effect of any system of physical training provided for their benefit. This is a serious matter at a time when an ever-increasing number of middle-class and upper industrial class children, who do not get adequate outdoor life, are undergoing a school training which involves the spending of a large portion of their time indoors. It is true that many of the graver evils which gave point to the agitation about "over-pressure" in normal training colleges for teachers, and even in elementary schools, during 1881–85 have long since been removed, but there are not lacking indications of passive, if not active, interference with health owing to prolonged indoor study, which call for our serious attention.

Experiments at Manchester Grammar School.

Many attempts have been made during the last ten years at the Manchester Grammar School to discover standards of health suitable for measuring any undue effects of prolonged mental effort, especially among the less vigorous boys.[2] It has long been noted that certain boys preparing for the higher examinations failed to make as much progress in physical growth as was expected at the annual measurements, and a few were noticed to fall below their previous records in weight or chest girth. Since, however, all concentration involves relative neglect of those activities on which we do not concentrate, and it did not seem clear that any permanent damage to health resulted, no further steps were taken other than to provide still further opportunity for holiday recreation by increasing the number of open-air holiday camps, hours off for games, &c., for which the school had already made generous provision.

Attempts have recently been made to add measurements of functioning of particular organs to the standards of normal growth already in use in the school. Tests based on changes in the functioning of the respiratory system were sought for, as such changes were easily recognised, even when only existing in minor degree, and it seemed evident that adequate breathing was an important means by which recovery from fatigue was accomplished. Many inquiries and several tentative efforts were made to obtain satisfactory respiratory tests, and much assistance was gained by examining those elaborated for the Air Force by Martin Flack and others.

Respiratory Tests for School Work.

Respiratory tests suitable for school work may be arranged in three categories:—

1. Tests originating in the measurement of respiratory range or total volume of air expired in relation to the body surface, and adopted by Prof. G. Dreyer to bear relation to the output of trained muscular activity of what is known as "physical fitness," or prowess.

2. Tests based on the measurement of the force of inspiration and expiration—that is, measurement of the force of those voluntary and involuntary muscles which are impressed into the service of vigorous respiratory action. The movements may be momentary or sustained, and are measured on an ordinary U-tube mercury manometer, the first being calculated by the height and the second by the length of time during which the breath can be held against a slight resistance. This power grows rapidly during adolescence, as is shown in the following series of figures. Boys are grouped according to age and length of their holding breath.

Seconds breath is held.	Age 11–12	12–13	13–14	14–15	15–16	16–17	17–18
90	—	—	—	—	—	1	—
85	—	—	—	—	—	1	—
80	—	—	—	—	—	—	—
75	—	—	—	—	—	—	—
70	—	—	—	—	—	—	—
65	—	—	—	—	—	—	—
60	—	—	—	—	—	—	—
55	—	—	—	—	—	2	—
50	—	—	—	—	1	1	—
45	—	—	—	—	1	—	—
40	—	1	1	1	—	—	1
35	—	1	—	—	3	2	2
30	—	4	1	4	7	4	—
25	4	2	—	4	3	5	—
20	7	4	3	6	3	3	—
15	4	6	3	1	2	1	—
10	5	2	3	2	—	—	—

There is a considerable range of difference between boys of similar age, and the power of sustaining the breath varies with the condition of health. It is a useful test of persistent fatigue and overwork when once the optimum standard of a boy has been fixed.

3. Tests based on the completeness with which the several regions of the thorax display their functional activity. This test depends on clinical examination and measurement of the movements of special regions.

The examination of regional movements was introduced by Walshe and Sibson and others, and had been carried to a high degree of excellence by the researches of Arthur Ransome (Stethometry, 1876). The recent work determining the exact functional significance of the several thoracic regions by Arthur Keith, Wood Jones, Briscoe, and others has opened up some new problems for which stethometry, or exact measurements of chest movement, is again needed. The measurement, as well as the localisation during early adolescence, of any defect of the respiratory mechanism, such as can readily be made in connexion with ordinary school life and activities, is of great importance, as it indicates lines for developmental and corrective treatment at the most appropriate period and occasion.

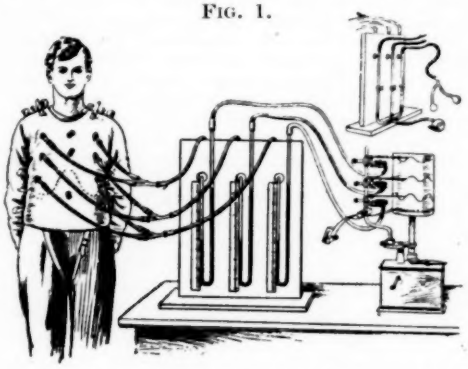
All the above tests are at present in general use in the Manchester Grammar School. The third or regional method required special methods and special

[1] See also Transactions of the Manchester Statistical Society, Dec. 14th, 1921.

[2] See THE LANCET, Estimation of Physique and Stamina for School Purposes, 1915, i., 115.

apparatus. For its elaboration, advice was sought at the physiological and anatomical departments of the Manchester University, and the Medical Research Council made a grant to defray the cost of special instruments. Dr. MacSwiney suggested that simultaneous measurements of several regions might be taken according to Marey's methods, if children's light air balloons were held in appropriate positions

FIG. 1.



A regional chest-movement recorder for measuring fitness and detecting the nature of respiratory deficiency, in use at the Manchester Grammar School. The recording drum is only used for special cases; the method of fitting the air bladders is shown in the sketch of the back of the manometer board.

about the chest by a waistcoat and their necks attached to a manometer or other recorder similar to the air cushion of a blood-pressure apparatus. Messrs. Beatty Bros., tailors, Manchester, made various suggestions about the shape, material, and fastenings of the waistcoat. Major E. M. Mumford suggested several mechanical simplifications in the apparatus, and Prof. J. S. Stopford kindly criticised the scheme for the regional placing of the bladders. The apparatus illustrated (Fig. 1) was therefore the result of numerous inquiries. By its means examinations have been made, not only on many boys showing deficient powers and range of breathing, but on men of many vocations, such as singers, boxers, gymnasium instructors, and swimmers, of whom graphic records are given below (Fig. 2). The method is a comparative rather than an absolute one, and for absolute measurements of the several movements calipers are often used. The recording drum was subsequently added to the apparatus in order to obtain a graphic as well as a numerical record. The regions chosen for examination were: (1) Manubrium, (2) mid-sternal, (3) epigastric, (4) supraclavicular, (5) infraclavicular, (6) mammary, (7) submammary, (8) infrascapular or postero-lateral.

Group records were generally taken as follows:—

(*a*) To examine movements of the operculum; supraclavicular (bilateral or unilateral); manubrium.

(*b*) To examine upper costal (so-called female breathing); infraclavicular (bilateral or unilateral); mammary; sternal.

(*c*) To examine lower thoracic, or so-called diaphragmatic breathing, inframammary (7–10th ribs); epigastric; postero-lateral or infrascapular (region of 10-inch, 11-inch, and 12-inch ribs).

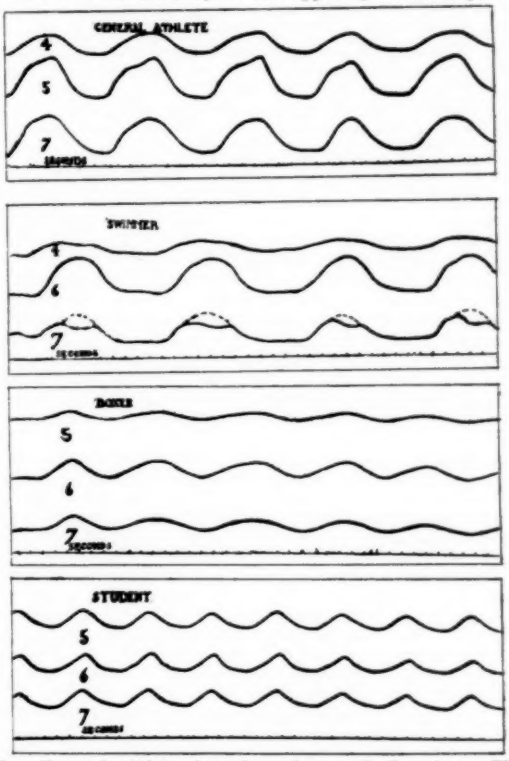
(*d*) To examine movements of abdomen.

The results of (*d*) were uncertain and the method temporarily abandoned till it could be elaborated on a better basis. The grouping of the records enables comparison of different regions to be made, either in a vertical series, manubrium—sternal—epigastric, or in circumferential series, anterior—lateral—posterior, or the movements of one side can be compared with those of the other, if old or recent lung mischief is suspected. The supraclavicular and manubrium regions move freely in subjects accustomed to make highly emotional efforts as in singing. Movements of this region often predominate over those of the lower thoracic region where there is nasal atresia; feeble, general musculature; or defective innervation of muscles as in rickets.

The Clearest Indication of Bodily Vigour.

The mammary and mid-sternal regions move most freely in subjects with well-developed pectoral muscles—singers, swimmers, long-distance runners, and gymnasts. The movements of the submammary regions, and still more the postero-lateral regions, covering the 10th–12th ribs, afford the most complete indication of innate bodily vigour. It is rare to find great persistence and continuousness in effort among boys, when the movements of this region are limited. There may be considerable development of strength in the shoulders and arms with restricted lower costal breathing, owing to tonic contraction of abdominal muscles, but any blow given by the arm will be a sudden effort rather than a sustained one. The movements of the 10th to the 12th ribs are most conveniently tested by placing oneself behind the back of the standing subject and placing the fingers on the tip of the 11th rib, and then requesting the subject to make a very deep inspiration. A very marked outward movement, due to uncurling of the rib, is noticeable in vigorous subjects. The functional

FIG. 2.—*Records of Four Types of Breathing.*



The all-round athlete showed ample use of all regions. The swimmer showed high development of pectoral regions. The boxer showed lack of development of apices of lungs with general restriction of expansile movement. The student showed lack of depth of lower costal regions, which may be lack of development or effect of fatigue.

activity of the region which centres about the anterior third of the 11th rib has not yet received adequate attention. Movement is greatly restricted in children with hollow backs or weak spinal muscles. It is probably accomplished by the ilio-costal muscles and by the serratus magnus posticus, which act as muscles of inspiration by uncurling the two floating ribs. Indeed, this is probably the reason why the 11th and 12th form no attachment directly or indirectly with the sternum, but remain as floating ribs. During expiration in vigorous subjects, the external oblique pulls them back to their original position.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF LARYNGOLOGY.

THE TREATMENT OF MALIGNANT GROWTHS OF NASAL ACCESSORY SINUSES.

A MEETING of this section of the Royal Society of Medicine was held on March 3rd, with Sir WILLIAM MILLIGAN, the President, in the chair.

Mr. E. MUSGRAVE WOODMAN opened a discussion on the above subject. He said that crude methods of dealing with these growths were still advocated by some authorities, and instanced cauterisation by a red-hot poker still practised, according to the latest reports, at the Mayo Clinic. It was his own practice before operation to give careful consideration to the microscopic diagnosis and to the extent of the disease as revealed by carefully taken X ray photographs. Broadly speaking, the soft vascular sarcomatous growths were more suitable for radium or X ray treatment, while operative treatment held out the best prospect of cure in cases of epithelioma. The X ray pictures (antero-posterior and lateral views) might reveal extension of the growth into the spheno-maxillary fossa, where its presence might be overlooked at operation unless this careful examination was made. As for operability, he did not himself regard proptosis or even blindness as making the outlook hopeless, but the extension of growth through the sphenoidal fissure was a contra-indication to operation.

The Operation of Choice.

Mr. Woodman advocated intra-tracheal ether with the use of an air-way for expiration as the ideal anæsthetic for these operations. The patient was placed in a special chair, and the operation carried out with the patient sitting up—a position which gave a better view of the parts and lessened hæmorrhage. The incision commenced in the eyebrow, was carried round the side of the nose, around the ala, and divided the lip. This incision possessed many advantages over the Ferguson incision, more especially in giving good access to the frontal sinus. The whole cheek flap was turned aside and the periosteum of the orbit displaced outwards. The antrum was then opened, the ethmoid exenterated, and the growth removed. Extensions of the growth into the frontal sinus, orbital cells, and ethmoid were dealt with by freely opening up the sinuses. During the whole of the operation large mops soaked in tinct. benzoin were employed to cover the flap, by means of which he believed the sowing of malignant cells on the raw surface was avoided. When the whole of the growth had been removed, the flap was replaced, and if carefully sutured, the scar was not very disfiguring. At the conclusion of the operation the ether was replaced by oxygen, a measure which he thought contributed to the remarkable absence of shock which followed the extensive operation he practised.

There were one or two points he wished to emphasise. Whenever possible the hard palate should be left. The frontal sinus should invariably be opened, and cleared freely. Mr. Woodman did not like tying the external carotid artery—in the only case in which he had tied this vessel gangrene of the flap ensued with fatal results. Hæmorrhage could be controlled by ordinary surgical means. In many cases the main trunk of the internal maxillary artery could be identified and tied. He had no set rule for dealing with the glands of the neck, but generally adopted a waiting policy, since it was not always possible to foresee on which side secondary lymphatic deposit might occur. In his opinion there was no need for tracheotomy or laryngotomy which carried a definite risk of septic pulmonary complications. After operation a dental plate with an obturator (when necessary) should be fitted; this was best done in collaboration with a dental surgeon. Mr. Woodman always submitted his patients to treatment by X rays or radium after operation. His operative mortality for this extensive operation had been two amongst about 50 cases: one from pneumonia (this patient was operated on in the recumbent position which had since been abandoned), and one from gangrene of the flap (vide supra). Recurrences, however, had occurred in a number of cases. These were dealt with by reopening through the old incision, and since operative successes had followed this procedure, Mr. Woodman advised more frequent operation for recurrence.

In conclusion, he said that the operation of excision of the superior maxilla performed by the general surgeon for all malignant growths of the antrum was to be condemned as a routine procedure. For some cases it was much too extensive, and for others quite insufficient. Operation for these growths should only be performed by a surgeon who possessed special knowledge of the anatomy and pathology of the region.

Other Methods.

The PRESIDENT remarked on the thoroughness of the operation advocated by Mr. Woodman, although he expressed some surprise that it should be thought necessary to clear the frontal sinus in every case. On searching his own records of cases during the past five years he could only find one in which a carcinoma had spread to the frontal sinus, but it was possible that such extension might have been missed. He would in future be on the look-out for this condition. Personally he preferred to tie the external carotid, and could not remember any case in which serious sloughing of the flap had occurred. It was an interesting comment on the "red-hot poker" operation that it had been advocated by Celsus, 50 B.C. He also condemned the routine performance of Ferguson's operation.

Mr. W. STUART-LOW said that he also preferred the upright position and did not tie the external carotid artery, nor did he approve of the formal excision of the upper jaw. He personally preferred the antral route, which he thought gave sufficient access. When recurrence occurred it was treated again by the antral route followed by X rays, which could penetrate to the pterygoid region when the surface growth had been removed. A formidable complication of these operations was sepsis, nearly always due to the *Staphylococcus albus*. He therefore treated his patients before operation with vaccines, and at operation by the application of a solution of zinc chloride to the raw surface.

Mr. F. J. O'MALLEY emphasised the fact that hitherto malignant growths of the nasal accessory sinuses had fallen to the lot of the general surgeon by whom they were classed with tumours of the upper jaw; and that diagnosis was only made after the growths had extended beyond their cavities of origin and invaded such parts of the orbit, mouth, face, and nose, or set up secondary deposits in lymphatic glands—too late for any hope of successful surgery. He hoped that by bringing such cases under the care of rhinologists, earlier diagnosis might become the rule. His own experience was limited to four cases, three of sarcoma and one of carcinoma, the latter being discovered at operation to be too extensive for radical treatment. The three cases of sarcoma, the earliest operated on in 1918, were still alive, although one case had recently shown a recurrence which was being treated by radium.

Mr. W. M. MOLLISON said that his operative experience consisted of 17 cases, 3 of sarcoma and the remainder of carcinoma, mostly of the basal-celled variety. The incision he employed depended on the situation of the growth—for the antral type Ferguson's incision, and for the ethmoidal Moure's. He had found recurrences most frequently occurred in the malar region, and therefore devoted special attention to this part at operation. He did not agree that the frontal sinus was so frequently implicated in the growth, as Mr. Woodman suggested. He made a practice of opening the sinus because, like all the other air sinuses, it usually contained pus. He also preferred intra-tracheal ether as the anæsthetic. His operative mortality amongst the 17 cases was one, an old lady in whose case he had

been obliged to remove the hard palate, a proceeding which, in his opinion, greatly increased the gravity of the operation. The ultimate prognosis in these cases was, however, not good. The majority exhibited recurrence within a year. He advocated tying the external carotid artery—the procedure led to sloughing only when the skin had been removed without a sufficient layer of subcutaneous tissue.

Mr. NORMAN PATTERSON said that he made a practice of tying the external carotid artery and had never encountered any serious sloughing of the flap. By tying the artery the operation was simplified, since the tumour mass could be more readily identified by its appearance. He condemned the routine opening of the frontal sinus, since he thought there was a definite risk of sowing malignant cells in the cavity when it had previously not been diseased. For extensive growths he relied largely on diathermy after scraping out the growth as far as possible. Even when it was necessary to remove a portion of the hard palate, he thought an effort should be made to leave the portion carrying the incisor teeth intact, and the soft palate should never be sacrificed. All his cases of sarcoma or endothelioma were submitted to some form of ray treatment before operation, but this was not so useful for carcinoma. He also preferred intra-tracheal ether as the anæsthetic.

A Series of 23 Cases.

Mr. DOUGLAS HARMER reported a series of cases of malignant disease: 15 of epithelioma of the antrum, 2 of columnar-celled carcinoma of the ethmoidal region, and 1 of spheroidal-celled carcinoma of the outer nasal wall involving the antrum, 7 cases of endothelioma, and 2 of sarcoma. Twenty-three were operated upon with 2 deaths, 1 from meningitis and 1 from septicæmia after radium. This low mortality (compared with Butlin's of nearly 30 per cent.) he attributed to the performance of preliminary laryngotomy with plugging of the pharynx. When the tumours were vascular preliminary ligature of the external carotids should be considered. In spite of the low operative mortality, the ultimate mortality was high, only 2 of the 18 carcinoma cases lived for more than three years without recurrence, and no case of endothelioma escaped recurrence, although life had been prolonged by a second operation or radium treatment for as long as ten years. He therefore concluded that the wound at operation was often reinfected so that a partial excision was preferable to the removal of the entire maxilla. His best results in carcinoma had attended excision followed by diathermy and radium. Endothelioma was best treated by radium followed by excision and sometimes diathermy, with radium after treatment. Sarcoma should be treated by radium in the first instance or by diathermy and radium. After diathermy or radium treatment it was often necessary to operate for the removal of sequestra and later for plastic repair of deformity. To prevent recurrence it was advisable to keep the patients under X ray treatment for one to two years. When secondary glandular deposits had occurred he did not think any treatment would be of avail.

Mr. A. J. WRIGHT pointed out the close ætiological connexion between chronic suppuration and carcinoma in other places, and questioned whether chronic antrum suppuration should not be regarded as a precancerous condition. As regards operative technique, he preferred laryngotomy to intra-tracheal ether, which he considered embarrassed the operator by causing frothing in the mouth.

Mr. W. G. HOWARTH said that the degree of malignancy of the tumour should be considered before undertaking operative treatment, which was best suited to the slower growing carcinoma. Irradiation should always be given before operation for sarcoma, and he had even seen one case of inoperable carcinoma apparently cured by radium. He therefore considered that radium treatment should be given more extended trial even for carcinoma. When operating he employed Moure's incision, which gave better access to the ethmoid and back of the nose than the formal excision of the upper jaw.

Disappointing Results from Radium.

Mr. E. D. D. DAVIS commented on the importance of early diagnosis. The operation he performed resembled Mr. Woodman's. His patients were placed in the semi-recumbent position, he preferred intra-tracheal ether as the anæsthetic, and he did not tie the external carotid artery. The antral route did not commend itself to him, since it gave no access to the orbit and only very poor access to the roof of the antrum. His experience of radium treatment was disappointing. The tumours which disappeared so miraculously recurred rapidly. None of his cases had lived for more than two years. Even the case which he had previously exhibited to the section as an apparent cure by radium had since died. Nor had he any reason to have better faith in X rays.

Sir STCLAIR THOMSON said he was responsible for the introduction of Moure's operation into this country,[1] but that since this time he had found it advisable to modify Moure's original incision by omitting the cut along the lower margin of the orbit, which he had found unnecessary and by not carrying the vertical incision into the nose. By employing this modified Moure's incision amply sufficient bone could be removed to give free access to the nose and ethmoidal cells. He did not agree with Mr. Woodman as to the extension of the growth to the frontal sinus, since he had never seen recurrence from this situation. He had a patient alive and well ten years after operation for epithelioma, and another also well 12 years after operation for endothelioma. He therefore thought that surgeons should not despair of this condition.

The Incision Required.

Mr. H. TILLEY considered it unnecessary to leave any scar on the face, since he claimed to get amply sufficient access by opening the antrum through the mouth. He never tied the external carotid artery, but practised preliminary laryngotomy and plugging of the pharynx in preference to intra-tracheal ether, which he found very embarrassing. Mr. Tilley said that his patients were placed in a semi-recumbent (almost sitting) position for operation.

Mr. A. J. HUTCHISON inquired whether radium was ever responsible for blindness. He had seen a case, in which the vision in the eye of the affected side had previously been poor, develop total blindness in that eye after radium treatment.

Mr. J. L. JOYCE said he had been present at an operation by Mr. Woodman upon one of his personal friends. He had been impressed by the exposure afforded by the incision, by the ease with which hæmorrhage was controlled, and by the absence of shock after an operation lasting more than three hours. He had expected some effect on the vision from disturbance of the orbital contents during the operation, but this fear proved to be needless, since the patient was able to write a letter soon after operation.

Treatment by X Rays and Radium.

Dr. N. S. FINZI discussed the ray treatment of malignant growths. It was the aim of those practising this sort of treatment to administer a lethal dose to every malignant cell. It was now recognised that this lethal dose varied for different types of malignant cell, being lowest for round-celled sarcoma and highest for carcinoma. This explained the successes obtained in the treatment of sarcoma and the fact that the greatest success was obtained in cases of round-celled sarcoma, spindle celled and myxosarcoma requiring a higher dosage for their extirpation. A complication of ray treatment was sepsis, which made it dangerous to administer much more than the lethal dose. The Erlangen treatment aimed at the preliminary sterilisation of the growth by copper ionisation, after which an intense dose of rays was administered and repeated six weeks later if the blood condition permitted. A third dose eight weeks after the second was administered for carcinoma, but not for sarcoma. He thought it important

[1] THE LANCET, 1916, i., 987.

to point out that the prognosis after ray treatment was adversely affected by any previous surgical procedure which damaged the blood and lymph supply to the part. In reply to Mr. Davis, he said that operation should not be contemplated for at least a month after such treatment, and, in reply to Mr. Hutchison, that he had only once seen a serious effect upon the retina from the application of radium to rodent ulcers in the region of the eye. As, however, radium caused an effusion into the tissues, it was possible for radium to cause severe disturbance of vision from effusion under the retina.

Summary of Discussion.

The PRESIDENT summarised the consensus of opinion of the section. The majority favoured (1) tying the external carotid; (2) extension to the frontal sinus was uncommon although infection frequently existed; (3) on the question of laryngotomy *v.* intra-tracheal ether the section appeared to be equally divided; (4) irradiation before operation had not been sufficiently practised in the past, nor had the dosage suitable for the type of cell concerned been properly considered; (5) most of the members favoured Moure's incision or some modification. The incision should be long, and the cosmetic result was only of very minor importance.

Reply.

Mr. WOODMAN, in reply, said that in this serious disease the cosmetic result was not of great importance, although by careful suture and after treatment with X ray and massage scars resulted which were only very slight. He urged the opening of the frontal sinus, since it contained pus and polypi in 90 per cent. of cases, and in three of his cases actually growth. It was a principle of the surgery of malignant disease to attack all possible paths of extension, and the individual accessory air-sinuses were only parts of a whole. He had personally found the tying of the external carotid to be quite unnecessary. Some of the disadvantages urged against intra-tracheal ether could be overcome by covering the return airway with a towel. He considered that had chloroform been administered through a preliminary laryngotomy his mortality would have been increased.

EXHIBITION OF CASES AND SPECIMENS.

The following illustrative cases and specimens were shown:—

Mr. WOODMAN: (1) Case of Malignant Disease of Right Antrum Removed by Operation; and (2) case of Double Myxo-sarcoma of the Face.

Mr. HUTCHISON: Endothelioma of Right Antrum, Ethmoids, Sphenoid, &c.

Mr. F. J. CLEMINSON: Spindle-celled Sarcoma of the Left Maxillary Antrum.

Mr. HARMER: (1) Rodent Ulcer involving Orbit, Maxilla, and Antrum; (2) Endothelioma of Maxilla and Antrum; (3) Sphenoidal-celled Carcinoma of Nasal Fossa and Antrum; (4) Carcinoma of Nasal Fossa and Antrum.

Mr. BEDFORD RUSSELL: Case of Tumour of Doubtful Nature removed from Right Ethmoidal Region.

Dr. DAN MCKENZIE: (1) Epithelioma of Ethmoidal Region Five Years after Operation; (2) Ineradicable Endothelioma of the Superior Maxilla (Antrum) under Treatment by Diathermy.

SECTION OF BALNEOLOGY AND CLIMATOLOGY.

THE ÆTIOLOGY OF GOUT.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 23rd, Dr. A. HILL JOSEPH, the President, being in the chair, when Dr. LLEWELLYN JONES LLEWELLYN opened a discussion on this subject. His remarks will be found elsewhere in this issue of THE LANCET.

Discussion.

Dr. C. M. WILSON said that modern tests measuring the efficiency of the kidney and the liver threw an interesting light on the theories of gout which attributed that disease to faulty renal or hepatic function. Both in gout and in the early stages of interstitial nephritis there was an increase of uric acid in the blood, without a rise in the urea and creatinine. But whereas in interstitial nephritis, as the disease progressed, there was an accumulation of urea and creatinine in the blood, in gout, in the cases examined, there was no such retention. This point had to be considered by those who ascribed gout to renal inefficiency. An investigation by modern methods of the renal function in patients with gout in the earlier phases of the disease was needed to settle the part the kidney played in the ætiology of that disease. His investigation of hepatic efficiency in gouty subjects was at present incomplete.

Sir WILLIAM WILLCOX congratulated Dr. Llewellyn on a brilliant exposition of an interesting theory. All would be in general agreement with many of the views expressed by him. The susceptibility of gouty patients to certain influences was notorious. Sir William Willcox quoted a patient who had a severe attack of gout following the administration of a linctus containing oxymel of squill, possibly due to a protein in the honey. Dr. Llewellyn was rather difficult to follow when he jumped from the effects of proteins to that of lead. It was most desirable to use one's imagination in a scientific way, but laboratory confirmation of Dr. Llewellyn's views was wanted before these could be accepted, by tests such as those used by Dr. John Freeman in hay fever. Sir William Willcox agreed with Dr. Wilson in the importance of research into the functions of kidney and liver. With regard to the former, the function might be normal, but the important point was that the threshold of the kidney for uric acid was altered in gout—comparably with the alteration in the threshold for sugar in diabetes. As to the liver, there was no doubt that this was the site of protein metabolism: the lævulose, lipase, and cholesterin tests might throw light on the condition of the liver in gout. In France a post-prandial leucocytosis had been observed in gouty patients. Sir William Willcox was more particularly interested in gout in relation to possible infective causes. The recurrence of attacks in susceptible people he could attribute only to the presence of some infective focus. An abnormal streptococcus was occasionally found in stools, and large doses of a vaccine prepared therefrom precipitated an attack of gout in the patient. The infective theory would account for the beneficial effect of the Plombières treatment and of Harrogate waters on some patients. Gout was often associated with phlebitis and thrombosis, and might also occur in sensitive people after a streptococcal infection.

In the absence of Dr. A. T. FISHER, the secretary read his communication supporting the infective theory on the grounds that though no bacteriological evidence was forthcoming the clinical evidence was striking. The peculiar structure of the synovial membrane might account for the fact that no bacteria were found in the joint: the fluid was often sterile even in well-marked gonococcal arthritis. The discrepancy of the results of investigators was not relevant, since similar pathological conditions might be caused by different organisms.

Dr. C. W. BUCKLEY quoted cases illustrating the close association between renal calculi and gout. In support of Dr. Llewellyn's remarks about the low blood pressure often seen in gouty patients, Dr. Buckley spoke of having examined a large number of cases, all but two of which had a subnormal blood pressure.

Dr. F. PARKES WEBER described cases of gout without tophaceous formation and of the presence of tophi without the symptoms of acute gout.

The PRESIDENT congratulated Dr. Llewellyn on his paper because his theory correlated bacterial with other suggested causes of gout.

Dr. LEONARD WILLIAMS considered gout a deficiency disease—due to impaired function of the internal secretory glands, caused in turn by a lack of vitamins

in the diet. The reason that gouty manifestations increased as the patient grew older was that the defensive power of the internal secretory glands against foreign proteins decreased with age.

SECTION OF STUDY OF DISEASE IN CHILDREN.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 24th, Sir ROBERT JONES, the President, being in the chair.

Dr. B. T. PARSONS-SMITH showed a case of

Congenital Mitral Stenosis.

The patient was a delicate under-sized boy, aged 15 years. His mentality was normal. There was no evidence of any past illness. He suffered from breathlessness when going upstairs, and cough on exertion. The throat was healthy. The heart was enlarged and the præcordium prominent. The apex beat was in the fifth space, four and a half inches from the mid-sternal line. There was engorgement of the superficial veins of the upper thorax. The heart rhythm was regular but fast. There was a presystolic thrill at the apex, and a loud first sound and systolic shock. The pulmonary second sound was accentuated. The blood-vessels were normal. The blood pressure was 130 mm. systolic, 85 mm. diastolic. There was no jugular or visceral stasis. The electro-cardiogram showed a regular heart beat at 120; the individual complexes were composed of the normal series of waves in normal sequence. The auricular wave was unduly prominent, and at times bifid; the P.-R. interval varied from 0·18 to 0·20 second; right ventricular preponderance was well displayed. The question was whether it was a congenital lesion or a deformity of the valves due to infection after birth. He thought that it was congenital. There was no history of any illness, and the case was associated with definite infantilism.

Dr. F. PARKES WEBER suggested that the case was not congenital. Mitral stenosis was known to occur after attacks of rheumatic fever so slight that no history of infection could be obtained, whereas congenital mitral stenosis had hardly been proved to exist. Mitral stenosis associated with infantilism was well recognised, especially in France, where it was termed "cardiac" or "mitral dwarfism."—Dr. G. A. SUTHERLAND said that, in his opinion, the case was undoubtedly one of acquired mitral stenosis. The absence of a history of rheumatism counted for very little.—Dr. E. BELLINGHAM SMITH agreed with Dr. Sutherland, but added that on one occasion, among 42 post-mortem examinations of cases of congenital heart disease, evidence of mitral stenosis was found. This child was under 14 months of age.—In reply, Dr. PARSONS-SMITH withdrew his provisional diagnosis and thought that perhaps the case was one of "cardiac dwarfism."

A Case for Diagnosis.

Dr. PARSONS-SMITH showed a case of Dr. Strickland Goodall's for diagnosis. Patient, a boy aged 11 years, had always suffered from palpitation and shortness of breath on exertion. He had had measles when 3 years of age, and at 4½ years was certified by the school doctor as a case of heart disease. The boy was poorly developed, the præcordium was prominent, and the heart enlarged, the apex beat being in the fifth space, three and three-quarter inches from the mid-line. The rhythm of the heart was regular; systolic and harsh diastolic murmurs were present at the aortic base, the latter murmur being loudest at the third left interspace. There was a coarse diastolic thrill. At the base of the heart the second sound was accentuated. The vessels were not thickened, and the pulse was regular. Systolic blood pressure was 125 mm., while the diastolic was 70 mm. No venous engorgement was seen. The electro-cardiogram, which showed sinus arrhythmia, was normal and physiological, and there was no ventricular preponderance. Orthodiagraphic records indicated exaggerated pulsation and width of aortic shadow. Dr. Parsons-Smith suggested that either the cusps of the aortic valves were deficient, or that the septum dividing the primitive truncus arteriosus was imperfectlydeveloped. He thought there was no doubt that the lesion was congenital.

Dr. PARKES WEBER said that the murmur to the left of the sternum was the typical "rolling-mill" murmur of a patent ductus arteriosus.—Dr. SUTHERLAND thought the case was certainly not one of patent ductus arteriosus, but one of acquired double aortic disease, for the following reasons: (1) The murmur was loudest to the right of the sternum; (2) there was hypertrophy of the left ventricle; (3) a double murmur was present at the base of the heart; (4) the pulse was the typical "collapsing pulse."—Dr. JOHN PARKINSON did not think the pulse typical of aortic regurgitation, but it might be that of double aortic disease in which stenosis was the preponderating lesion.—Dr. E. A. COCKAYNE did not think the murmur was that of uncomplicated patent ductus arteriosus.—In reply Dr. PARSONS-SMITH said that most congenital heart lesions were complicated, and a typical picture was seldom obtained. There was evidence in this case against an acquired lesion in the nature of the murmurs, the thrill, and from the electro-cardiographic records. He adhered to his original diagnosis of aortic mal-development.

Mr. B. WHITCHURCH HOWELL showed a case of

Arthritis of both Hips.

In March, 1913, the patient, a boy then aged 4, was admitted to hospital as a case of rheumatism in both legs—the diagnosis being later altered to tuberculosis of the right hip-joint. He was treated by extension and tuberculin injections. In February, 1917, the left hip was similarly affected, and in August, 1917, a sub-trochanteric osteotomy of the right femur was performed. Mr. Howell first saw the patient in November, 1921, when the right hip-joint was dorsally dislocated and apparently ankylosed. The thigh was flexed at 30° at the hip, adducted to 30°, and slightly internally rotated. There was a scar in the groin of a recently healed sinus. The right knee-joint showed slight valgus, with undue lateral mobility. The left hip-joint was incompletely ankylosed. It was flexed at 40°, adducted 30°, and externally rotated. There were 2½ inches of shortening. In walking he was inclined to cross his legs and walked upon the balls of the right toes, constantly catching them on the ground. There was mid-dorsal kyphosis which came on six months ago, without pain or any sign of abscess. This deformity was increased by stooping. The case was shown for diagnosis, and suggestions as to the nature of the kyphosis and as to treatment.

The PRESIDENT said that the case was a typical double ankylosis. The gait was due to the adduction, and resembled that of an adolescent coxa vara. He considered the kyphosis to be due to tuberculosis. For treatment he suggested osteotomy of the short leg and fixation in abduction. For the longer leg he would later perform a pseudarthrosis. No operation should be undertaken until it was certain that the disease was no longer active.

Dr. COCKAYNE showed a case of

Transposition of the Viscera with Congenital Heart Disease

in a female child aged 2. The patient was cyanosed and the heart was enlarged. A systolic thrill and murmur were present over the right base. The fingers were clubbed. Electro-cardiograms were exhibited. He thought it might be a case of pulmonary stenosis or patent septum ventriculorum.

Dr. BELLINGHAM SMITH showed a case of

Congenital Aortic Stenosis associated with Rheumatic Mitral Endocarditis.

The patient, a boy aged 15, complained of breathlessness; he had always been delicate, and had suffered from "heart disease" from the age of 3. When he was 8 years old he was admitted to hospital for rheumatic fever. The heart was enlarged, with a

marked basal thrill. There was a harsh aortic systolic murmur transmitted to the right clavicle. Systolic and diastolic murmurs were present at the apex. Dr. Bellingham Smith said that in the records of 100 cases of "congenital heart disease" he could find no case where rheumatic endocarditis was superimposed.—Dr. COCKAYNE remarked that the murmur was audible without in any way touching the chest wall, and Dr. BELLINGHAM SMITH replied that this was typical of all congenital murmurs.—Dr. PARKES WEBER and Dr. PARSONS-SMITH agreed that the case was of congenital aortic stenosis, and the latter added that in his opinion there was no evidence of mitral valve infection.—In reply, Dr. BELLINGHAM SMITH said he considered the condition to be not entirely congenital. Rheumatic fever almost always resulted in some injury to the heart. The Wassermann reaction had not yet been performed.

Dr. BELLINGHAM SMITH also showed a case of

Fröhlich's Syndrome.

The patient was a youth, aged 19 years, who had been very fat since birth; he had come to hospital complaining of pain in the left side and back. He was stunted and obese. His face was bloated, and the venules were dilated. There were rolls of fat around his neck; his breasts were of the female type, and were slightly pendulous. The abdomen was enormously enlarged, and had wide, bluish striæ, similar to "lineæ gravidarum." The left testicle was rudimentary and the right one was absent, while there was very little pubic hair. His voice was shrill, like that of a little boy. His skull was small, and his cerebral development was below the average, but his mentality was fair. The optic discs were normal, as were the fields of vision. The urine contained 6·5 per cent. of sugar. X ray plates of the skull were exhibited. They showed no change in the sella turcica.

Dr. SUTHERLAND drew attention to the peculiar complexion which seemed to indicate a polycythæmia. He thought it was characteristic of hypernephroma, and inquired if there was any evidence of a suprarenal tumour.—Dr. PARKES WEBER agreed with Dr. Sutherland that this was not a case of Fröhlich's syndrome. The presence of the glycosuria and the striæ were against this diagnosis. He inclined to the view that the condition was due to a suprarenal tumour. He thought that a blood count and the Wassermann reaction would be of interest.—Dr. C. P. LAPAGE said that he had seen a similar case. The patient was a girl who had become excessively obese. There had been notching of the teeth, and the Wassermann reaction was positive. She was given antispecific treatment and a triglandular extract (thyroid, pituitary, suprarenal) was administered. She became of normal size; but recently had begun to increase in size owing to diminished administration of the glandular extracts.

Tonic and Hypertonic Hearts in Children.

Dr. C. P. LAPAGE and Dr. W. J. S. BYTHELL showed radiographic illustrations of abnormal conditions of tone of the heart in children. Apart from valvular disease, two abnormal conditions were shown to occur: (1) hypertonia, and (2) atonia. Atonia is to be expected, but the condition of hypertonia is not, and it was to this condition that special attention was directed. Physical tests carried out on children who had tic or habit-spasm, tachycardia and nervous emotional symptoms, had suggested the existence of a condition of over-action and over-contraction of the heart. On X ray examination of these cases it was found that the heart was in a condition of hypertonia—i.e., screen examinations made from back to front showed the lateral diameter to be decreased at the base, and the vertical diameter to be increased. The natural convexity of the heart to the left tended to be obliterated. The hypertonic condition is easy to recognise by X ray examination. The results of physical examination made by percussion and auscultation, and also by special tests, which brought the question of emotion, of exercise, and of intrathoracic pressure into play, were correlated with X ray examination in a series of 100 cases. The results were substantially in agreement. The value of the X ray examination in estimating the degree of atonia was also demonstrated. Certain hearts which were hypertonic at the first examination became atonic while under observation as a result of some toxæmic condition, such as tuberculosis or rheumatism or chorea.

Dr. BELLINGHAM SMITH said that the hypertonic condition of the heart would explain the perpetual tachycardia of some children. He thought it unnecessary to blame infection as the cause of hypertonicity; it was probably a nervous condition, while atonic conditions of the heart could be explained as due to infection.—Dr. SUTHERLAND considered that the paper was most suggestive, but he did not think that Dr. Lapage and Dr. Bythell had proved their point. There had been no correlation between the clinical condition and the skiagram in each case. A heart in a state of atony was naturally a large heart, while a heart beating quickly was naturally contracted and small. He thought the changes in the heart had not been watched over a sufficiently long interval; the child's heart should be watched every five minutes for 24 hours. It might be found that the shape and size of the heart would vary considerably each time.—Dr. PARSONS-SMITH inquired if any arrangement had been made as regards the part of the heart's cycle when the skiagram was taken.—In reply, Dr. LAPAGE said that he and Dr. Bythell had watched the heart throughout its cycle, and had found that it made no difference in the skiagram. He said that he had clinical correlation with the X ray results, but had not entered fully into this on account of shortness of time. The child with the hypertonic heart was a jumping, extremely nervous child, entirely different in type from the child with the atonic heart. There were no murmurs present in either case. Dr. Bythell and the speaker had felt that they should have more observations on individual hearts under different conditions, and they had planned further experiments.—Dr. BYTHELL said that the sagging observed in the atonic heart was not due to enlargement. He cited a case which he had observed under varying conditions. The patient was a soldier whose heart was wounded by a piece of shrapnel. The skiagram showed the typical atonic heart with the sagging outline on the left side. As the heart gradually recovered, the skiagram approached that of a normal heart. Some time later the patient collapsed rather suddenly after violent exercise. Dr. Bythell again took the opportunity of observing the X ray of the heart, and found that it had once more settled down into the typical atonic heart.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

THE USE OF ANALYSIS IN DIAGNOSIS.

A MEETING of this Association was held at the rooms of the Medical Society, London, on Feb. 23rd, Dr. C. HUBERT BOND, the President, occupying the chair.

Dr. T. S. GOOD read a paper with the above title. He said analysis must be used by every practising physician and surgeon in all kinds of cases; they must be influenced in their decision by what they saw, felt, and heard. Until a quite recent date the material upon which the doctor drew had been the conscious only, but thanks to the ingenuity, the genius, and the patient work of Freud, a new source of medical knowledge had been opened to the profession, for he found that the solution of many of the problems as to the cause of neuroses and psychoses lay deeply buried in the unconscious mind of the patient. By special methods of technique these elements could be disclosed and brought into consciousness, and energy hitherto dammed back could be released to bring about improvement or cure. This had never been better demonstrated than during and after the war in cases of shell-shock and neurasthenia; for many cases had been cured by psychotherapy, of which psycho-

analysis was one of the instruments. By following the method of free association, physical conditions could be diagnosed which would otherwise escape notice or be only partially understood; because the key to the solution of the physical mischief lay repressed in the unconscious, and so could not be furnished by the patient in response to the usual examination.

Two Cases Described.

Dr. Good elaborated his point by quoting in detail two cases, which had been diagnosed, respectively, as neurasthenia and hysteria.

The first case was that of a man, aged 50, who, after four years of war, was invalided out in 1918 with the diagnosis neurasthenia. He had been under a varied treatment, and had tried, but with only partial success, to resume his pre-war occupation of motor-body making. There was nothing abnormal in the family history. At his first attendance at the clinic he was obviously apathetic and depressed, questions being answered slowly and with apparent indifference. He complained of a headache, great depression, inability to work, loss of memory, and was puzzled as to what could be the matter with him. He said that at times he felt "lost and giddy." The right side of his face did not move so well as the left. The tongue was protruded straight; the pupils were normal and equal in their reactions; fundi and vision also normal. The only abnormality in the reflexes was that the plantar on the right was indefinite. Oppenheimer's sign was absent. Sensation, coördination, and muscular sense were normal, also muscle tone, and there appeared to be nothing wrong with the organs. The pulse-rate was 80.

The two abnormalities mentioned indicated that the case was not purely functional, but they did not form a sufficient basis for a firm diagnosis. The patient was unable to remember a certain period of his war experiences; he showed a disinclination to talk of the war, beyond stating that to it he attributed all his disability; he had a desire to stay quietly by himself.

After the third interview the man's demeanour changed, and he began to coöperate in his treatment and to associate, with the result that his thoughts and feelings on his illness became clearer. A part of his life which he could not account for, however, was a period during a voyage at sea. He was on a ship when it was torpedoed at sea, but he could remember nothing between that explosion and his being in hospital. But details emerged in his mind as he evinced more interest and showed coöperation, and eventually he was able to describe what happened after the ship was struck. It appeared that he was thrown across the cabin, and his head came into violent contact with a bulkhead, injuring his left parietal region; he remembered feeling and hearing his skull crack. Feeling very sick and ill, he rushed with others on to deck. He was rescued from the sea and taken to hospital. The whole of this amnesia was removed at one sitting, and the patient then expressed great surprise, remarking, "I do not know why it is, but I feel all right, and am glad I can now remember everything." On returning to the clinic a fortnight later he said his memory was good and he felt better, but instead of the dull headache, he now had a new and more acute pain in the head, such as he had never experienced before, except when his head struck the ship's bulkhead, and the site was the same. This directed attention to a probable injury of the left parietal region, perhaps a fracture, with some resultant injury of the brain. A surgeon thereupon operated, and discovered a 2-in. fracture at the exact site of the pain and some bruising of brain substance. Previously there had been no suspicion of an organic element in the case. In this case, the amnesia having been cured, the clue was supplied by the patient himself. His attention to that stage had been so concentrated on his mental feelings that physical sensations were unnoticed until the mental conflict had been solved. The man had now recovered his mental poise, but the pain in the head was still present, and following the operation he had slight hemiplegia.

The second case was that of a man aged 25, reputed normal before the war. After serving two years in the army he was discharged, the diagnosis being "hysterical fits."

When his mother brought him to the clinic she said his disposition had now completely altered, for at times he was violent, aggressive, and irritable. He was said to have been having two kinds of fits, but both were ushered in by twitching on the right side of the face. Sometimes he became rigid, and seemed dazed and dull afterwards, with headache. In the other kind of fits he threw himself about, and was afterwards violent and irritable. The man was unable to remember any of the fits. When pressed to talk about the war he became irritable. Generally, the reflexes on the right side were greater than on the left; on the right also there was some muscular weakness. At the second interview he was induced to talk about the war, when it was found that his memory of events for long periods was very defective; he did not remember why he had been sent home, nor when the fits started.

The detailed history which Dr. Good read showed that his trouble was connected with heavy trench-mortar warfare, in which he received a severe head injury. By the method of association the blank interval was made good, and then the patient talked freely about the episodes he experienced. After the recovery of the memory the emotional fits ceased, but the rigid fits increased in frequency. The right-sided weakness seemed to indicate that on that side there was increased intracranial pressure, probably due to head injury. Later the operation of decompression was performed, and since then he had had only two epileptiform attacks. He was discharged three months later. Four weeks afterwards his mother brought him again and said there had been no attacks since he was discharged, and that he was now working as a gardener.

After pointing out the parallelism in the two cases, Dr. Good commented on the fact that one of them reacted by being depressed (introverted), the other by becoming excited (extroverted). The cases showed that psycho-analysis could be of use in diagnosing organic conditions.

The PRESIDENT, in thanking Dr. Good for his interesting contribution, deprecated any tendency to regard the materialistic and the psychiatric schools or lines of thought as being opposed to each other. The cases described in the paper showed how useful was the broad, inclusive view in unravelling difficult cases.

A short discussion followed, and in his reply Dr. GOOD elaborated at greater length some of the aspects of this line of inquiry.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held at Sheffield on Feb. 17th, Mr. HAROLD CLIFFORD (Manchester), the President, in the chair.

Exhibition of Cases.

Dr. D. DOUGAL (Manchester) read notes of a case where Ectopic Pregnancy had occurred twice within four and a half months.

Mr. LEYLAND ROBINSON (Liverpool) showed a specimen of Sarcoma of the Cervix. The patient was a 4-para, aged 40 years, and complained of backache and an offensive discharge of 18 months' duration. The growth produced a localised ulcer indistinguishable from carcinoma and it was only after operation that histological examination revealed its true nature. The epithelial structures of the cervix were unaffected, but the stroma was typically sarcomatous.

Mr. W. GOUGH (Leeds) read notes of a case where Rupture of the Uterus had occurred through the scar of a Cæsarean section performed two years previously. The uterus had been sutured with two layers of catgut at the previous operation. The patient was admitted to hospital at full term complaining of pain in the back and lower abdomen. She was well enough to walk to the hospital, but within four hours she presented the symptoms of an abdominal catastrophe and operation was decided on. The abdomen contained a quantity of blood-stained fluid, and a hæmatoma was present under the utero-vesical peritoneum and in the left broad ligament. This was due to the uterine scar giving way at its lower end. The uterine wall was incised to one side of the rupture and a dead child extracted. The old scar was then excised and the uterine wall sutured with catgut. Recovery was uneventful.

Mr. MILES PHILLIPS (Sheffield) read a paper on the

Gynæcological Sequelæ of Genital Tuberculosis of Childhood.

He had been interested in these cases for several years and his chief object had been to collect evidence to prove that certain gynæcological complaints—e.g., primary amenorrhœa, dysmenorrhœa, dyspareunia,

and sterility might occasionally be due to damage done to the genital organs by tuberculous disease occurring during childhood and before the organs were fully developed. The evidence of the original disease nearly always indicated tuberculous peritonitis, and for this he had usually to rely on statements made by the patient or a near relative. For instance, one patient knew that at the age of 11 she was very wasted, had a swollen abdomen, and was sent into the country for months. Many of the patients were supposed to have had typhoid fever and he had actually had two cases of genital tuberculosis sent to him direct from isolation hospitals where they had been under treatment for this disease. None of his patients had symptoms of phthisis, but two or three had puckered scars on the neck suggestive of old suppurating tuberculous glands. As regards the damage done to the genital organs, he had found the Fallopian tubes affected in all cases, the mucous membrane being hopelessly destroyed in some, in others the abdominal ostium was closed and the lumen distended with pultaceous material. In some cases the endometrium was affected leading to more or less obliteration of the uterine cavity and then primary amenorrhœa, hæmatometra, hydrometra, or even pyometra might occur. The functional disturbances were as follows: Menstruation was generally late in starting, infrequent and scanty, but in a few cases commenced at the average age, and was free or even profuse. It was always painful. In some cases it was absent or the products were retained as a result of obstruction to the outflow. Sterility, with or without dyspareunia, was sometimes the chief symptom, and married life was apt to aggravate the patient's troubles. The speaker read notes of five cases bearing on the subject of the paper, and in conclusion stated that the prognosis as regards sterility was a gloomy one. It was advisable to warn the patient or a responsible relative that the uterus or appendages might have to be removed. Conservative treatment was unsatisfactory, but radical measures gave excellent results.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Feb. 16th at the University, Sheffield, with Dr. GODFREY CARTER, the President, in the chair, when Mr. E. W. HEY GROVES read a paper on

The Repair of Bone Injuries.

He referred to his experiments with metal plates on fractures in animals, which showed that the presence of metal was not prejudicial to new bone formation. It was to the methods of dealing with gaps in bone and the principles involved in filling them that Mr. Hey Groves mainly directed his remarks. He pointed out that powdered bone placed between a gap was of no use, but that comminuted bone was satisfactory provided there was no interference with its blood-supply. The use of a dead graft was almost as good as a living one. The importance of firm fixation of grafts was emphasised, and of wide contact between the bone of the host and of the graft, as being factors which promote and stimulate osteogenesis. The paper was beautifully illustrated with lantern slides, showing some of the methods used by the lecturer.

In the discussion which followed, Prof. A. M. CONNELL, Mr. GRAHAM SIMPSON, Mr. E. FINCH, Mr. GARRICK WILSON, Mr. J. A. COUPLAND, and others took part.

THE LATE DR. CHARLES ASHENDEN. — Dr. C. Ashenden died at Hastings on Feb. 21st, at the age of 86. He studied medicine at Westminster Hospital, becoming M.R.C.S. in 1858 and L.S.A. in 1862. He was appointed the first medical officer of health to the borough of Hastings, holding the position for 28 years. He was also borough analyst, medical officer to the Post Office, and surgeon to the Cinque Ports Artillery. He was a prominent Freemason and a keen follower of hounds.

Reviews and Notices of Books.

INSTINCT AND THE UNCONSCIOUS.

A Contribution to a Biological Theory of the Psycho-Neuroses. Second edition. By W. H. R. RIVERS, M.D., D.Sc., LL.D., F.R.S., Fellow and Prælector in Natural Science, St. John's College, Cambridge. Cambridge: At the University Press. 1922. Pp. 277. 16*s*.

Dr. Rivers was well known before the war as a first-hand investigator of the beliefs and cultures of primitive races. At that time, as he points out in this book, it was becoming obvious that the intellectual factors which so greatly interested the academic psychologist were wholly inadequate to explain human behaviour, and the war allowed opportunity for him to apply to the study of the psycho-neuroses the newer theories that trace conduct to sentiments resting upon instinctive trends; this book contains a constructive criticism of the theory of the unconscious and an attempt to harmonise it with other modes of viewing human conduct. It must be explained that Dr. Rivers uses "repression" to indicate a conscious effort to avoid thinking of unpleasant experience, and the process by which experience becomes unconscious he calls "suppression," though for this process the term "repression" is justified by priority of usage amongst psychoanalysts, who are not agreed as to whether repression (in their sense) is entirely and always an unwitting process; hence Dr. Rivers is on sure ground in making his distinction, but his alteration in usage necessitates explanation, and the older usage is not likely to be changed. We owe to him the word "unwitting" in place of "unconscious," in its popular sense; this helps to clearness of expression, but "unconscious experience" is a doubtful phrase. By it Dr. Rivers generally means experience that has been suppressed, but sometimes, as on p. 108, it seems to apply to experience that is actually going on in the unconscious; yet a third meaning might indicate experience through which a person passes without conscious attention and the memory of which he retains in the unconscious.

The author's most important contribution to theory concerns suppression, which, drawing freely upon the work of Head, he shows to be a biological process that takes place in regard to protopathic sensation as the epicritic develops; similarly the primitive reactions of the optic thalamus are suppressed and only become manifest when cortical control is removed by disease. The instinctive reactions, with their all-or-none tendencies, are likewise subjected to suppression, and, finally, the elements of experience which would interfere with adaptation are thrust into the unconscious. Thus a number of links connect the suppression of highly complicated mental processes at one end of the series with the suppression necessary for reflex action at the other. This conception seems actually to indicate continuity rather than mere analogy, and justifies the sub-title of the book. Dissociation, by which he indicates suppressed experience which acquires independent activity and independent consciousness, Dr. Rivers explains as arising from a primitive means of dealing with experiences difficult to reconcile with one another, illustrating this hypothesis by reference to an amphibian which would be benefited in the water by the complete shutting off or dissociation of its memories of dry land. To find in a remote amphibian ancestry the clue to man's property of dissociation of consciousness is speculative but not out of harmony with the conception of the evolutionary development of suppression. The attempt to formulate hysterical symptoms as a modification of the instinct of defensive immobility, whilst the suggestibility is due to the need for unity of herd action as regards such immobility, depends upon a selection of symptoms like anæsthesia or paralysis, and can scarcely apply to many others. This conception of ætiology, as Dr. Rivers admits, involves a separation of war hysteria,

arising from a danger instinct, from civilian hysteria, which depends often upon disturbance of the sex instinct; but his clinical differentiation of the two varieties is not convincing. The anxiety neurosis Dr. Rivers would call "repression neurosis," regarding it as due to a failure of instinctive suppression followed by an effort to repress wittingly. In his chapter on "wind-up" Dr. Rivers favours the abandonment of repression, and would urge the patient to face his fears. It was by following this principle that many workers were led to the revival of war memories with abreaction, which Dr. Rivers does not describe, though he gives a convincing account of the cure of a claustrophobic by the revival of childhood memories. The case, first described in 1917, is often quoted and seems likely to become a classic.

This edition contains two new appendices and there are a few alterations in the text. The author disclaims experience of psycho-neuroses in time of peace, and expresses the hope that his views will be tested by those to whom that experience is available. Some of his views have already been challenged by psychologists and the work is admittedly incomplete on the clinical side, but the original and open-minded method of handling the subject makes it a notable and scientific effort to bring clinical psychology into harmony with wide biological conceptions.

POISONOUS ANIMALS.

Animaux venimeux et venins. By Dr. MARIE PHISALIX. Paris: Masson et Cie. 1922. With 17 plates and 521 text-figures. Pp. 656+864. Fr.120.

THESE noble volumes, now published by Mme. Phisalix, are the result of many years' work in the Natural History Museum in Paris, in collaboration, until his death in 1906, with Dr. Césaire Phisalix. They attempt a survey of the anatomy, histology, physiology, chemistry and pathology of the whole series of poisonous animals from protozoa with their trichocysts to ornithorhynchus with its femoral gland and spur. Where possible a classification is made into animals armed with some weapon with which they administer the poison to their own advantage ("venimeux"), and those which are poisonous when their bodies are eaten ("vénéneux")—a distinction which reveals a looseness in our own vocabulary of "venomous," "toxic," and "poisonous." Thus among fishes we have species like the weaver, which, with a poison gland and an inoculating spine, inflicts the serious injuries which have been investigated by Dr. Muir Evans, and those like Tetrodon, which usually or frequently produce symptoms in those who eat them. The latter group are mostly found in tropical seas, and the affections to which they give rise are grouped under the unfamiliar heading "ciguatera," derived by a curious development from the popular name of a West Indian mollusc, which is often indigestible. Under fishes we get also a full account of the species whose blood serum is highly toxic to mammals: eel serum has been a favourite material with a number of immunologists.

The first volume covers the invertebrata and fishes; the second the toads, salamanders, lizards, and snakes. The treatment is uneven. Spiders, for example, are described fully, but diptera only very briefly, and fleas are not mentioned at all. An interesting account of the stinging apparatus in hymenoptera shows the universal presence of "acid" and "alkaline" glands; and this may be the explanation of the observation made by Mr. E. R. Speyer some years ago[1] that wasp-stings, unlike bee-stings, are alkaline, and should be treated with vinegar instead of the blue-bag. Personal trials over a summer tea-table with a packet of litmus papers and a pair of forceps gave irregular results with wasps; the ejected liquid was sometimes frankly alkaline, sometimes apparently as acid as that of the bee. Curiously enough, no one has, for the wasp, imitated Langer, who extracted 12,000 bees in one batch in his classical investigation of the nature of the poison.

Like all good books, this one continually suggests lines of progress by propounding fascinating problems. Why, for example, can the hedgehog live on cantharides without coming to any harm? What is the volatile secretion which enables the bombardier beetle to make his defensive explosions? Is the essential element of bee poison really a simple base, and, if so, can there be genuine acquired immunity, as bee-keepers state? Snake venoms have been so prominent in the development of our knowledge of immunity that we are apt to forget that not all the animal poisons are, like these and those of scorpions and spiders, protein in nature. Millipede poison is said to be a quinone, and a number of relatively simple substances have been identified as the active agents in the poisonous skin secretions of frogs, toads, and salamanders.

The book will be especially welcome to pathologists, since it deals more fully with the anatomy of the apparatus than with those aspects of the question to which other sources of access are easily available. There is an ample bibliography with good indices in both volumes. The coloured plates, though we would not be without them, for they are magnificent, are not really necessary, since the line drawings in the text reach the high level so often attained in France.

[1] THE LANCET, 1919, ii., 445.

HORMONE THERAPY

By Sera, Vaccines, and Drugs. By D. MONTGOMERIE PATON, L.R.C.P. & S. Edin. London: Baillière, Tindall and Cox. 1922. Pp. xv. + 168. 7s. 6d.

IN this little book Dr. Paton preaches a revolutionary doctrine which suggests possibilities far beyond anything that has yet been attained in therapeutics. Dr. Paton has for some 15 years been treating diseases on what he considers physiological principles, which involve the use of various types of sera, administered orally, and vaccines. Having had considerable success with his methods, he endeavours to find a physiological explanation for these results, and the greater part of his book is devoted to an exposition of these ideas. Dr. Paton's main argument is that all defence is physiological and is at least potentially present before infection, the two lines of defence in the body being the lymphatics, which produce antibodies, and the blood serum, which contains all the hormone elements required by the body for physiological activity. His treatment of disease is based on this theory; he believes that he increases antibody formation by stimulation of the lymphatic action; this in turn excites the various endocrine glands to pour into the blood-stream larger amounts of hormone secretion, which he pictures as the last line of defence against infection. Dr. Paton advocates the oral use of serum where the hormone defence in the serum of the patient is failing, and he recommends particularly anti-diphtheritic serum of low antitoxic potency for supplying the blood with hormones. The antitoxic qualities of the serum have no value when administered per os, but he believes that the hormones of the serum are absorbed and help in the restoration of the hormone balance in the blood.

His treatment for most infective conditions is the administration of vaccines first, in the attempt to encourage immunity and to excite hormone production in the blood; where this fails, he thinks he can supply the deficiency of hormones by the oral administration of sera rich in hormones. He gives favourable reports of this line of treatment in various types of disease. He even states dogmatically that in certain disorders such as alcoholism his treatment is a specific; since this statement is based on the successful treatment of 15 cases only of alcoholism, the claim for specificity would hardly seem established. Dr. Paton is not open to argument about his own results. He says that these are facts. But he is quite prepared to discuss the physiological interpretation of the results, and in this he is wise. The clinician longing for some new

ideas in treatment might with advantage study Dr. Paton's methods—and if he finds himself equally successful he will probably be content to allow the physiological explanation to be fought out by the experts.

The book is written in popular style and in many places glaring mistakes occur. For example, on p. 88 the dose of mist. cantharidin is given as 0·20 c.cm. to 0·50 c.cm. On p. 90, injections hypodermically of 20 c.cm. and 25 c.cm. are recommended. There is also a want of clearness in many of the statements, and the dogmatic interpretation of results will not always convince the critical reader. It is unfortunate that one of the sera recommended by Dr. Paton should be registered under a trade name; this gives a commercial aspect to the book which is out of keeping with its avowed purpose.

A TEXT-BOOK OF SURGERY.

By JOHN A. C. MACEWEN, Senior Assistant to the Regius Professor of Surgery in the University of Glasgow; Assistant Surgeon, Glasgow Royal Infirmary. Glasgow: Maclehose, Jackson and Co. 1922. Pp. 619. 30*s*.

THIS small text-book aims at giving concisely the fundamental facts of surgery necessary to enable a student to get through his final pass examination in this subject. Like all books of its class it suffers from the author's endeavours to keep it within a small compass. The spoken word impresses itself upon the student, owing to its manner of delivery, or to an accompanying gesture; but precise information set down in cold print loses emphasis, and may be but imperfectly retained. Moreover, certain omissions of important matter are almost inevitable. There is obviously no room in a book of this kind for debatable methods of treatment, nor for those yet on trial; but the fulguration of bladder papillomata is surely well established and worthy of mention, as is also partial resection of the stomach in selected cases of ulcer of the lesser curvature. The author refers to Kraske's excision of the carcinomatous rectum as the method of election. Few surgeons in the south will agree with him on this point.

A feature of the book are the photographs from an unusually good assembly of clinical examples of disease. Could line or wash drawings have been made from these they would have been even more attractive, for some of the reproductions of photographs fail to show well what they are supposed to portray. It was scarcely necessary to furnish seven illustrations of genu valgum, or to show two almost identical chancres of the prepuce, and the same remark applies to other illustrations, such as those of exstrophy of the bladder. But other collections are very valuable, especially those depicting the different forms of carcinoma of the breast and other mammary conditions, meningoceles, tumours in the region of the groin and upper thigh, and tumours of the head and neck.

The book will prove valuable to students and practitioners for revision of the subjects, but it cannot be employed as the only authority.

A MANUAL OF FEVERS.

Second edition. By CLAUDE BUCHANAN KER, M.D., F.R.C.P. Edin., Medical Superintendent, City Hospital, Edinburgh; Lecturer on Infectious Diseases to the University of Edinburgh. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1922. Pp. 334. 12*s*. 6*d*.

THE revised edition of this well-known manual is sure of a warm welcome. Certain additions and alterations have been made, and while the ætiology of many of the infectious fevers is still in doubt, the most recent views as to their causation and treatment are described. The book is primarily intended for the student to read while he is taking out his statutory course at a fever hospital, and so deals only with the diseases commonly met with in these institutions; thus influenza, poliomyelitis, and encephalitis lethargica are not described. The clinical signs and symptoms are portrayed in a masterly fashion, and the author's experience lends great weight to his considered opinion upon doubtful points. The clinician in practice will find much in the pages of this book that is of real value to him. The work might be made still more useful in a future edition if the dosage of the drugs recommended, and the strength of the solutions prescribed, were included. For example, though chlorine water is mentioned on p. 99 in the treatment of scarlet fever, the student must refer elsewhere for its composition. The six plates afford a graphic pictorial representation of the more common rashes, and there are numerous charts throughout the text in illustration of temperature behaviour.

DISEASES OF THE SKIN.

Fourth edition. By RICHARD L. SUTTON, M.D., Professor of Diseases of the Skin, University of Kansas School of Medicine. London: Henry Kimpton and Co. 1921. Pp. 1132. 50*s*.

THE first edition of this work appeared in 1916, and quickly won recognition for itself as one of the leading dermatological text-books. The present volume is admirable in every way. It contains nearly a thousand photographic illustrations, and 11 coloured plates, which include three of foot-and-mouth disease in man. The photographs are excellent; we know of no other published collection that can compare with them. The text is worthy of the illustrations, and has been brought thoroughly up to date without rendering the book unwieldy. The references are adequate and carefully selected.

Dermatologists will be interested in the account of dermatitis infectiosa eczematoides, a condition which was first rescued from the muck-heap of eczema by Engman, and was afterwards described in papers by Fordyce and the author himself. It is noteworthy that Dr. Sutton considers that an autogenous staphylococcal vaccine is of great value in this condition, although in general he agrees with Dr. Adamson that "clinically specific vaccines have proved a great disappointment." No mention is apparently made of the use of collosol manganese and stannoxyl in the treatment of staphylococcal infections, but sodium citrate is advocated in large doses for the treatment of boils. The section on syphilis is well written and profusely illustrated. Dr. Sutton is evidently not alone in preferring salvarsan to neosalvarsan, and intramuscular injections to intravenous ones. Special mention must be made of the directions for treatment; as a rule alternative methods are described, but the author does not hesitate to condemn those which in his own experience have proved useless.

To the advanced student and the practitioner, if only for its wealth of illustrations, this book should make a strong appeal, and the dermatologist will regard it as a most valuable work of reference.

BIOCHEMISTRY.

A Manual of Selected Biochemical Methods as Applied to Urine, Blood, and Gastric Analysis. By FRANK P. UNDERHILL, Ph.D., Professor of Pharmacology and Toxicology, School of Medicine, Yale University. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons, Inc. 1921. Pp. xi.+232. 17*s*. 6*d*.

DURING the past 10 or 15 years American workers, led by Prof. O. Folin, of Harvard, have studied and evolved numerous methods for the accurate and rapid analysis of urine, blood, gastric contents, and other tissues. Those in use at Yale University have now been collected together in this useful manual by Prof. Underhill. The reference to the original paper accompanies the account of each method; alternative methods are also described, but no indication is given of the relative convenience or accuracy of these. Possibly alternatives are offered without comment in order that the worker can practice the variations and

eventually select for himself. With a few exceptions all the methods described are by American authors, though researchers in Europe have described equally good ones.

We do not look upon the book as suitable for the student of general medicine, who must be first of all trained in the fundamental processes of analysis; but it is an excellent and handy manual for the use of the post-graduate worker.

Nucleic Acids: their Chemical Properties and Physiological Conduct. Second edition. By WALKER JONES, Ph.D., Professor of Physiological Chemistry in the Johns Hopkins Medical School. London: Longmans, Green, and Co. 1920. Pp. 150. 9*s*.

Dr. Walker Jones has attempted to give a comprehensive view of this interesting field of physiological chemistry as it exists at the present time and to preserve some historical order in the account of its development. The first portion of the monograph is concerned with the chemical properties of the nucleic acids, the second with their physiological conduct; the various and multitudinous researches which have been carried out and their bearing on the gradual development of the subject are set forth in an interesting and concise manner.

Not the least valuable part of the work, and one which will be welcomed by the biochemist, is the appendix wherein detailed methods for the preparation of thymus nucleic acid, yeast nucleic acid, and the different nucleotides are described. An account is also given of the analytical chemistry of purine, pyrimidine, the nucleosides and nucleotides, and a demonstration of the purine ferments. An admirable bibliography completes a volume which will find a place on the bookshelves of the physiologist and biochemist.

JOURNALS.

JOURNAL OF PHYSIOLOGY. Vol. LVI., Nos. 1 and 2.—The Action of Dimethyltellurium Dihaloids, by the late Douglas V. Cow and W. E. Dixon.—The Relative Excretion of Urea and some other Constituents of the Urine, by E. B. Mayrs. The experiments were made on male anæsthetised rabbits, the first tests being made with urea and sulphates and then with phosphate. The concentration of the several substances in the plasma and urine was determined and compared under experimental conditions after injection of these substances into the blood. No two substances have exactly the same concentration ratio, but sulphate, phosphate, and creatinine differ only slightly in the degree to which their concentrations are raised. These three substances are concentrated to a considerably greater extent than urea. The evidence obtained is considered more favourable to the theory of reabsorption in the tubules than of secretion. Urea is absorbed in considerable amount; in the rabbit, even during the diuresis, about half of that which passes through Bowman's capsule is restored to the blood. It is probably a "threshold" substance, and may be of some value in the organism. Possibly all substances are absorbed to a slight extent, but absorption in the case of "no-threshold" bodies is negligible and may be regarded merely as evidence of renal inefficiency. The fluid absorbed cannot be constant in composition, for calculations based on the absorption theory show that the concentration at which urea is returned to the blood can vary within wide limits although it never reaches the existing concentration of urea in the plasma.—Renal Blood-flow and Glomerular Filtration, by E. B. Mayrs and J. M. Watt: this paper is annotated in another column.

Regulation of the General Circulation-rate in Man, by C. G. Douglas and J. S. Haldane. The authors describe their method for determining the gas-pressures and gas-contents of the mixed venous blood, and the general circulation-rate in man, and figures are given of the circulation-rate and blood output per heart-beat in several adult men during conditions varying from complete rest fasting to hard muscular exertion. During rest 5 to 8 litres of blood per minute pass through the lungs in different men, and during the hardest work the estimated flow was about 24 litres per minute. During work there is a great rise in the percentage utilisation of oxygen in the blood, and owing to this the general circulation-rate does not increase in anything like direct proportion to the general metabolism, except when the work has already become so hard that little or no further increase in percentage utilisation occurs. The blood output per heart-beat is in many subjects no greater during either moderate or hard work than during rest, and is about 120 c.cm. for a man of average weight. In other subjects, however, the output per beat is perceptibly less than this during rest, and increases considerably during work. A moderate excess of CO_2 in the inspired air does not appreciably increase the circulation-rate, though it increases the breathing-rate. Excessive removal of CO_2 from the blood by forced breathing diminishes the circulation-rate greatly. This helps to prevent excessive fall of hydrogen-ion concentration (pH) in the tissues, but also produces anoxæmia. These facts are consistent with the view that the rate of blood-flow through different tissues is, as a rule, so regulated that the pressure of oxygen and the pH remain approximately constant round the tissue elements in each tissue. The rise of CO_2-pressure and fall of oxygen-pressure in the mixed venous blood during muscular exertion are due mainly to the facts that blood coming from muscles has normally a low oxygen-pressure and high CO_2-pressure, and that in exertion the mixed venous blood contains a higher proportion of venous blood from muscles.

Cheyne-Stokes Respiration. Part I., Production by Adrenalin, by Ff. Roberts. The author describes the form of periodicity and causation of the cessation of respiration followed by a certain degree of periodic respiration which is prone to occur in rabbits and cats when a large dose of adrenalin is injected intravenously. The Cheyne-Stokes respiration, which is sometimes produced by the injection of adrenalin, is of two kinds: major waves having a periodicity of 30 to 80 seconds, and minor waves having a periodicity of 5 to 15 seconds. These two kinds may occur together. Considerable differences exist between individual animals in their tendency to Cheyne-Stokes respiration. The major waves are due to rhythmic changes in the calibre of the cerebral vessels, the respiratory centre being quiescent owing to oxygen-want during closure of the vessels and active when the vessels are open. The minor waves seem to be associated with small oscillations in general blood pressure.—The Secretion of Sweat. Part I., Supposed Inhibitory Nerve Fibres on the Posterior Nerve Roots: Secretion after Denervation, by J. N. Langley. The hypothesis of the existence in the posterior nerve roots of inhibitory nerve fibres for the sweat-glands was put forward by Dieden in 1916. Intravenous injection of adrenalin has not been found to cause secretion of sweat. Ringer's fluid injected into the pad of a cat's foot commonly causes secretion of sweat and usually causes more than does adrenalin solution. Secretion is obtained whether the nerves are cut or not. Stimulation of the peripheral ends of posterior roots of the sixth and seventh lumbar nerves causes no secretion. Within certain limits of concentration of adrenalin and pilocarpine there is a mutual antagonism in their action on secretion. Ringer's fluid and adrenalin, when they cause secretion, cause it in the injected area only; pilocarpine, unless in minimal quantity, has a widespread effect. Denervation always causes some decrease of response to pilocarpine, but the decrease may be slight. A copious secretion may sometimes be caused by pilocarpine, injected in the gland region, even 38 days after nerve section. The secretion is not confined to the injected area as it is when Ringer's fluid is injected, and the author concludes that pilocarpine acts directly on the gland cells—probably on a receptive substance.

The remaining papers of an interesting issue include: The Maximum Work and Mechanical Efficiency of

Human Muscles, and Their Most Economical Speed, by A. V. Hill. The author describes experiments by which the maximum work performed by human muscles in a single voluntary contraction may be determined, and also the various factors affecting the work done in, and the mechanical efficiency of, muscular movements in man.—The Reaction of Resting and Active Muscle, by A. D. Ritchie. From the heat-production and lactic acid formation of muscles during activity it is possible to calculate how much lactic acid is concerned in a single muscle-twitch. Electrometric observations indicate that there is no appreciable change in the hydrogen-ion concentration of frog's muscle during moderate activity.—The Relations of Carbon Dioxide in Acidified Blood, by T. R. Parsons and Winifred Parsons.

MINERVA MEDICA. Gazzetta per il medico pratico. Via dei Mille, Turin. Annual subscription, 25 lire; foreign, 40 lire.—Our Italian colleagues are energetic in stimulating the progress of medical science by issuing new periodicals: we have just received the two numbers of Vol. I. of this journal, which appeared last December, and the first two numbers of the current year. The editor in his dedication alludes to the difficulties and anxieties which beset anyone who in the aftermath of the war requires the help of the press in order to make known his own studies in medical science, and indicates that the programme of the new gazette is to give the hospitality of its columns to all kinds of medical work, reviews, extracts, original clinical observations, and notices of professional and scientific interest. He has succeeded in obtaining the collaboration of both university and hospital elements in Turin.

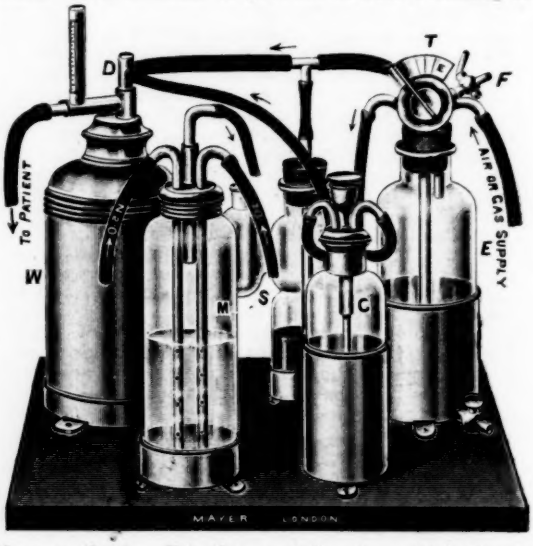
The papers in the four numbers are of decided interest, particularly those on the evolution and sequelæ of epidemic encephalitis by Profs. Ceconi, Micheli, Gavello, and Negro. There are other good papers on the Sachs-Georgi Reaction, by Dr. Romagnolo, and on the Surgery of the Bile Passages, by Dr. Uffreduzzi. Extracts from foreign journals are numerous. The cover is novel and picturesque.

IN the JOURNAL OF THE ROYAL ARMY MEDICAL CORPS for February further information is given about malaria in Macedonia. Captain K. McLay tells how Captain T. S. Hele, the physiological chemist to the Malaria Inquiry Laboratory, found that quinine, if given by the mouth, was more rapidly excreted in the urine than if given by intramuscular injection. That observation seems to be supported by Captain McLay's experience that, after oral administration of quinine, 80 per cent. of benign tertian cases cease to show parasites after two days, but only 45 per cent. after intramuscular or subcutaneous administration, consequently he is of opinion that quinine should always be given by the mouth if tolerated.—Lieut.-Colonel W. P. MacArthur, of the Army School of Hygiene, reports his discovery of a new ciliate, parasitic on, and destroying, larvæ of the mosquito *Theobaldia annulata*. The eyes of the larvæ are first attacked.—Major J. E. M. Boyd, in charge of the entomological laboratory, gives an account of the entomology of the dyke-land about Sandwich, with notes on cimex and pediculus. He notes that the irritation caused by cimex does not develop until 24 hours after the bite, a fact of some medico-legal interest, for injustice may be done to the lodgings in which the irritation develops immediately after a single night's occupancy.—Major Angus Macdonald thinks that medical officers and boards are apt to be unduly kind to "debility following malaria" in the assessment of disabilities, and recommends hæmoglobin estimation as a test of returning health.—Major G. R. Painton has a suggestive paper on the Convalescent Depôt as a Permanent Peace Organisation. Something is wanted to cheer a convalescent up, make him feel he has recovered though still not quite fit for duty, and bring him back under discipline; this Major Painton believes can be best done by keeping him away from both sick and well, and giving him games and graduated work.

New Inventions.

A COMBINED ANÆSTHETIC APPARATUS.

THIS combination is based upon the apparatus for administering warm anæsthetic vapours which I described in THE LANCET of Jan. 8th, 1916. It consists of five principal parts mounted on a wooden base—viz., E, an ether bottle; C, a Dudley Buxton's chloroform bottle; S, a mercury safety-valve; M, a sight-feed mixing chamber; and W, a thermos flask of quart capacity for warming the issuing vapour. E and C stand in metal jackets, which are partly filled with warm water in order to prevent excessive cooling of



the anæsthetic. T is the regulating tap which directs the flow of air or gas either (*a*) straight to the patient, or (*b*) through the anæsthetic, in any desired proportion; it passes then to D, which is a double metal tube immersed in the hot water of the thermos flask. F is the tap for replenishing the ether supply during intratracheal insufflation. I am indebted to Dr. Stanley Rowbotham for permission to use this excellent device.

When the apparatus is to be used for the insufflation of ether or nitrous oxide-oxygen-ether, or the inhalation of nitrous oxide-oxygen-ether, the chloroform bottle should be detached, and the efferent limb of T joined direct to D. In the illustration, the apparatus is connected up for the administration of warm ether, chloroform, or mixtures of these two. For intra-tracheal insufflation of ether, the foot-bellows or motor-pump is connected to the afferent limb of T. By opening the tap F the pressure is reduced when desired. For the inhalation or insufflation of nitrous oxide-oxygen-ether, the tubes of the mixing chamber M, marked N_2O and O_2 are attached to the nozzles of their respective cylinders; these are three in number—viz., two N_2O of 50 or 100 gallons capacity, and one O_2 of corresponding size, which are placed vertically in a three-ringed holder screwed to an upright rod; the lower end of this upright is fixed to a wooden base, and the upper end carries a metal plate, which supports the "combined apparatus" at a convenient height from the ground. A spirit lamp is used to keep the nitrous-oxide valve warm; this ensures a steady flow of the gas. The three-ringed holder and stand are described in Proc. Roy. Soc. Med., December, 1919. In all cases the vapour is administered warm. A further advantage is that induction can be carried out with nitrous oxide-oxygen-ether, an intra-tracheal catheter passed, and anæsthesia continued by the insufflation of these gases, if desired. The apparatus is made by Messrs. Mayer and Phelps, New Cavendish-street, W.

Queen Anne-st., W. FRANCIS E. SHIPWAY, M.D.Camb.

THE LANCET.

LONDON: SATURDAY, MARCH 11, 1922.

The Organisation of Voluntary Hospitals.

THE annual Representative Meeting of the British Medical Association at Glasgow will have before it, as part of the Council's Annual Report to the Divisions of the Association, a valuable statement on the organisation of voluntary hospitals, as affected by the reception of patients for whom payment is made by contributory schemes or otherwise. The statement, which is in the form of a report from the Hospitals Committee of the Association to the Council, embodies in a definite scheme the principles which, it is suggested, should enable hospitals to cope with the financial difficulties arising out of new conditions, medical and social. The position to be dealt with has been so often stated at length, summarised, and referred to as common knowledge, that its essentials can be set out in a sentence or two. Hospital treatment to-day is rendered far more costly through the progress of medical science and the cost of materials, while it is bestowed on patients a large proportion of whom receive wages on a scale never dreamt of by their fathers and grandfathers, but whose own expenses are vastly higher than formerly. National insurance, moreover, tends to bring into the sphere of the hospitals cases in large numbers which 12 years ago remained without institutional treatment, and it is one of the great accomplishments to the credit of the Acts that this should be so. The chief problem in this situation of added expenses and added responsibilities is dealt with in the British Medical Association scheme, when describing the modern adaptation of the voluntary system. Under the old and time-honoured plan subscribers and a voluntary medical staff relieved the sufferings of indigent members of the community, meeting the medical needs of those absolutely unable to pay the cost of the assistance given. But now we have to consider also the case of those who, though equally unable to pay the full cost, are not of the class for whom charitable subscribers have hitherto provided and maintained hospitals, or for whom honorary medical staffs have given their services—a vast population has grown up among us, which is neither a fit subject for charity nor desirous of charity; but which yet needs institutional help.

The main proposals of the B.M.A. scheme lead up to and provide for the grouping of candidates for admission to voluntary hospitals in three classes, and make suggestions with regard to the apportionment of "contributions" for the remuneration of medical services. The proposed groups, as defined in Clause 19 of the report, are:—

(*a*) Free (indigent) patients: To be certified as such by almoners.

(*b*) Tariff patients: Those paying, or for whom is paid in part or in whole, a tariff cost of maintenance and treatment; this group to include all those paid for by public authorities, approved societies, employers of labour, insurance companies, or other bodies, or under any contributory scheme.

(*c*) Private patients: Those who pay for special accommodation, and who arrange for medical fees independently of the hospital.

It will be seen that with regard to (*a*) and (*c*), the first and last of these groups, the questions that arise will mainly concern boards of management; these will act in the case of (*a*) through trustworthy almoners. Under (*c*) there may be an increasing number of private patients who are content to pay for ordinary accommodation, as is at present the case at cottage hospitals. The arrangements to be made under (*b*) to cover conditions of hospital service are more complicated and constitute the real difficulty and novelty of this scheme. These arrangements will be in the nature of preliminary bargains in which will have to be embodied, with due prevision and calculation of probabilities, the amount of financial support to be given to the hospitals, the limitations of the services to be rendered, and other questions which will demand careful consideration. Clause 10, for example, suggests a matter on which employers and workmen may fail to appreciate the justice of a proposition which is perfectly reasonable and of practical usefulness and prudence from the point of view of the hospital. This clause runs as follows:—"Gratuitous contributions to hospitals by employers of labour or by employees should not be considered as the payment of premiums for insurance against the cost of treatment for sickness or accident, nor as entitling the contributors to claim hospital treatment either for themselves or for persons nominated by them, but as charitable contributions to be expended at the discretion of those to whom the management of the hospital is entrusted." The clause introduces in convenient compass a question upon which many of those who, it is suggested, will attend hospitals as tariff patients, are certain to think strongly. There are extremists who speak of capturing all hospital administration in recognition of collective subscriptions; and there are persons who, though less ambitious, none the less think that an individual subscription gives the subscriber an individual right over the hospital management. The clause we have quoted challenges these positions directly, and would secure for the community the only fair way of allotting hospital accommodation—viz., the provision of beds for suitable cases.

Thus, whatever discussion may arise at the annual Representative Meeting as to the proposals made for the regulation of contributions by patients, or may be necessary in the future owing to the enforcement of such regulations, the Association will have before it practical suggestions for the meeting of a situation in which the need for a settled and carefully defined procedure is of urgent importance. They are suggestions which can be sifted by argument and discarded if someone is able to devise substitutes of superior merit. Particularly may this be said of the proposals affecting the voluntary medical staffs of hospitals and their colleagues outside. These are introduced with a statement of the tendency of the State, through local and central authorities, to require services of the voluntary hospitals, and the submission that services so required should not be charged to charitable funds, and that the payment made for them "should include an amount for the remuneration of the honorary medical staff of the hospital." It is added that "there can be no just claim by the State on the gratuitous services of a particular class of citizens which can be rendered only by that particular section, and are not and cannot be demanded from the general body of citizens." We need hardly emphasise the urgency of having such questions, arising out of contributing patients in voluntary hospitals, settled without delay to the satisfaction of the charitable public, of the contributors, and of the medical profession.

Prescribing by the Metric System.

THE advantages of the metric system have frequently been put forward, and though in many branches of science the system has now secured a firm foothold, yet medicine, so far as clinical work is concerned, lags behind, apparently reluctant to make the experiment. The reasons for this apathy have often been discussed with a certain degree of amused interest. The well-known conservative spirit, which actuates the older members of the medical profession, has been alleged to be the chief factor, even though this might be regarded as a polite method of indicating that, having learnt the art of prescribing in one way, a spirit of inertia renders them unwilling to discard and scrap their knowledge in favour of what may be a more excellent way. A second suggestion has been that the dispenser might conceivably be delayed in his work if confronted in quick succession by prescriptions on the metric and on the Imperial system; and it has even been thought that while such troubles confronted the fully trained pharmaceutical chemist, there would be others who were not acquainted with the metric system, and would therefore flounder hopelessly in face of difficulties.

Many misconceptions were removed by Dr. W. C. SILLAR in a paper on the Advantages of the Metrical System for Prescribing, which was read in Edinburgh recently at an evening meeting of the North British branch of the Pharmaceutical Society of Great Britain, and is published this week in our opening pages. The arguments adduced and the various devices for simplification and for safeguarding the prescription against ambiguity, or error, were favourably received by the audience. It is reassuring to note that Dr. SILLAR said he had not met with nor heard of any difficulty arising from ignorance or incompetence of the members of the pharmaceutical profession. The full paper[1] and the discussion which ensued are well worth the careful consideration of those who yet hesitate about the advantages of the metric system. To facilitate the transition the British Pharmacopœia of 1898 and that of 1914 have given due prominence to the metric system: in the latter issue all the pharmaceutical directions are given according to the metric system, while the doses alone retain, for the present, both the metric and Imperial systems. While there is apparently an intention to carry the line of progress further in the future, there is another factor to be considered—namely, the influence of such change upon the public. There can be no doubt that the general adoption of the metric system would necessitate great changes of habit amongst those accustomed to take their doses as fractional parts of the capacity of the bottle, or, more vaguely, as measured by some article in common use, such as a teaspoon, a dessert spoon, or a tablespoon. It is notorious that these severally differ greatly in size, and should therefore be replaced by measure-glasses. It might take time to effect such changes of routine, but they do not appear to offer any unsurmountable difficulties. There are more serious troubles to be faced so long as both systems are in vogue, in connexion with the National Health Insurance prescriptions which pass through the hands of a pricing bureau, of which the staff have to be trained to use the metric system, and to convert it to the Imperial system for pricing purposes.

The present tendency is so clearly toward the approximation of scientific methods amongst all civilised nations that there need be no doubt that in the future the metric system will be adopted in this country. Dr. SILLAR appears to consider that the clinical teachers and practitioners are largely responsible for the present slow progress made in this direction. Certainly the figures mentioned at the Edinburgh meeting show that relatively few prescriptions are written in the metric system, though dispensers generally are ready to deal with them. The public safety demands that only one system should be employed, since there is danger of error while both are used. The question is whether the inertia and apathy of the past should be allowed to continue, or whether the time has not come for the enforcement of the more simple and rational system for all medical and scientific purposes. This would entail the introduction of a new metric drug tariff for the use of the pricing bureau of the National Health Insurance, and this tariff would be facilitated by a decimal coinage. The way for such legislative measures has been prepared gradually and unobtrusively, so that cleavage from the old to the new would probably be the cause of no surprise, and would be effected with little inconvenience.

[1] Pharmaceutical Journal, Feb. 25th, 1922, p. 152.

The National Collection of Type Cultures.

THE labours of the botanical and zoological systematist are apt to be despised by those whose interest draws them to the more exciting investigation of how things live and move and have their being, rather than to the niceties of settling how one kind of thing may be distinguished from another sort. The bounding progress of SWAMMERDAM, RÉAUMUR, and JOHN HUNTER through the anatomy, physiology, and life-history of animals received something of a check with the rise of LINNÆUS in the second half of the eighteenth century, and his programme of describing, naming, and cataloguing all animate nature became perhaps rather too popular during the nineteenth century. But it was indispensable that the *Systema Naturæ* should be written, and it is indispensable that it should be continuously supplemented as the range of natural knowledge enlarges. The physiologist and experimentalist who speaks contemptuously of the "mere systematist" and the "gardening bacteriologist" might as well disparage NOAH WEBSTER. An orderly arrangement of objects and an adequate nomenclature for them must form the basis of any further progress in their investigation: *Nomina si nescis perit et cognitio rerum*. Nowhere in biology has this proved more true than in bacteriology. The study of micro-organisms has always been rather of what they do than of what they are, and workers have often been careless in taking note of names and descriptions and of working out the meticulous distinctions which enable the biological student of the higher plants to define more or less precisely the object to which he is paying attention, and to give it a name that will convey his meaning to others. And as descriptions are apt to prove imperfect and ambiguous and with increasing knowledge to become generic rather than specific, the systematic catalogue must be supplemented by the museum which will preserve authentic originals or duplicates. If anyone is interested in the parasites of an oak tree, he can ascertain at the Natural History Museum or Kew Gardens whether the host is *Quercus pedunculata* or *Quercus sessiliflora*, and what others call his particular gall or caterpillar. Now, thanks to the admirable scheme of a collection of type cultures of micro-organisms, established by the Lister Institute

and the Medical Research Council, if anyone thinks he has isolated FLEXNER'S dysentery bacillus he can go to Chelsea and obtain for comparison a culture of an organism which, after complete investigation, is by general agreement properly so described. The director of the collection, Prof. J. C. G. LEDINGHAM, and the curator, Dr. R. ST. JOHN BROOKS, have now issued their first catalogue,[1] which will be evidence of the actuality of the scheme to those who have not yet availed themselves of the generous facilities which are provided for working parasitologists. The collection is mainly bacteriological, but protozoa, yeasts, and moulds are also included, and plant as well as animal parasites. The arrangement of the catalogue is illogical but eminently practical, and the authors are to be congratulated on having resisted the temptation to essay a classification which, in the present state of knowledge, is impracticable and would be confusing. Of the benefits to parasitology of this extension of the fundamental basis of botany and zoology there can be no doubt; it has come just in time to prevent chaos becoming irremediable. The distinction of one flea from another may seem a trivial matter. But the discovery by the systematic entomologist that under the name *Xenopsylla cheopis* three closely allied, and to the uninstructed eye identical, species have been confused seems likely, according to Major F. W. CRAGG'S inquiries,[2] to be the explanation of some anomalies in the distribution of plague in India which have hitherto received no satisfactory explanation. And it was the begetter of this dull business of systematics who, when he saw the gorse in flower on Berkhamsted Common, kneeled down on the ground and thanked GOD for making the world so beautiful.

CANCER MORTALITY.

IN the registration area of the United States 73,000 deaths were returned in 1920 as due to cancer, which is equivalent to a death-rate of 834 per million of population, as against 805 in 1919. These death-rates are "adjusted" in order to make allowance for differences in the age and the sex distribution of the population. In this country similarly adjusted death-rates are described as "standardised"; and it thus becomes practicable, without any error caused by varying proportion of the two sexes or of persons of different ages, to compare the experience of England and Wales and of the United States in its registration area. In 1919 the English death-rate from cancer was 964, as compared with 805 in the States, and the question naturally arises as to whether cancer is more prevalent here than in the States. Its prevalence, as measured by mortality statistics, varies in different States, the adjusted rate being 980 in Massachusetts and only 459 in South Carolina. In the group of States in which adjusted rates have been calculated separately for the white and the coloured population, the highest rate for whites is 925 and for coloured persons 822 per million, and the corresponding lowest rates are 476 and 385 respectively. The conclusion arrived at in a recent weekly return of the United States Public Health Service is that the white and coloured races seem equally susceptible to cancer; but that both races seem less susceptible in the south than in the north. It is doubtful if the figures will bear the weight of this conclusion. It is more likely that the differences in mortality from cancer, comparing northern with southern States, and both with England, are largely if not entirely explicable by varying degrees of accuracy in average diagnostic skill and in certification of cause of death in the areas compared. The fact that in Massachusetts an adjusted cancer-rate of 980 (in 1920) compares with a standardised cancer-rate of 964 (in 1919) in England strongly suggests this alternative view.

[1] Medical Research Council, Special Report Series, No. 64. Stationery Office. 1922. 1s. 6d.
[2] Indian Journal of Medical Research, vol. ix., 1921, p. 374.

Annotations.

"Ne quid nimis."

CLIMATIC IMPONDERABILIA.

THE return of daylight at tea-time, the Royal wedding, and the appearance of a new edition of Baedeker's "Switzerland" combine to produce a stirring in the blood which heralds the onset of spring. The physiologist could probably measure this stirring in terms of oxygen absorbed or relation to CO_2 output without fully accounting for all the bodily changes concerned in it. Then there are psychic changes in addition to mere fashion or parrot-like habit of imitation which determine the restlessness of spring. Dr. Felix Savy in a recent letter[1] complained that Alpine resorts for the treatment of pulmonary tuberculosis are very much overrated. Egypt, the Canary Islands, and South Africa have, he said, had their day; now it is Switzerland. Soon, he implied, it will be the British sanatorium. There are certainly at present elements in climate which cannot be properly assayed. Dr. C. W. Saleeby recently discovered to the daily press the virtues of sunshine at Leysin, and Dr. Leonard Hill has investigated with new apparatus the cold, dry, still air and sunshine of Montana in relation to the early treatment of tuberculosis. Many volumes have been written on meteorological observations made at pleasant places. In the meanwhile, as several correspondents in charge of home sanatoriums point out, patients with tuberculosis continue to get well in what depressed people are apt to call the damp and trying climate of the British Islands. There is, after all, no such thing as the effect of climate. We can read thermometers and anemometers in certain places, or we can observe the effect of sun and wind on certain individuals exposed at the same time to a large number of other variable influences, physical and mental. The chief clinical evidence so far available in regard to the benefits of Spahlinger's serum is of its action on Russian prisoners of war whose bodies were well nourished and whose minds were free from anxiety during its administration. Nevertheless, one thing is quite certain, and that is that the central plateau of Western Europe will continue in our own generation as it was for our parents and grandparents to be the playground of its flatland neighbours.

Baedeker's "Switzerland," first issued in 1863, now in its twenty-sixth edition,[2] is a valuable handbook of applied climatics. The long interval, due to the Great War (as the handbook calls it), has necessitated thorough revision of such tiresome climatic secondaries as hotel charges, railway and steamer fares, cab and guides tariffs which have, as we know too well, "increased 100 per cent. or more since 1914." The economic situation has pressed severely on the hotel industry, and price stability is hardly yet to be expected. How rapidly changes occur is evident from the statement in the handbook that the Swiss gold coin of 20 francs is now never seen, which to-day is the reverse of true, for since Christmas gold has been circulating freely in Switzerland and visitors have been encouraged to take some stock thereof away with them. An introductory section on climate in the handbook makes no scientific pretension but states the traveller's experience of 50 years. In the case of nervous patients it is sagely pointed out that climate is not the sole factor in the choice of a health resort, since the effect of the "grandest Alpine air" may be frustrated by the rattle of the nine-pin alley or other noisy amusement. The marvellous rapidity of recovery from mental strain during residence at a height of 5000 to 6000 feet above sea-level is duly noted. The general hints for the conduct of week-end tours and mountaineering are practical if sometimes homely; the value in diarrhœa of the homœopathic tincture of camphor may not be great, but the medicine is harmless. An interesting table

[1] THE LANCET, Feb. 25th, 1922, p. 403.
[2] London: T. Fisher Unwin, Ltd. Pp. 537. 15s.

shows the curious distribution of language over which the visitor is apt to be more sensitive than the native. Most Swiss are polyglot, but in all the cantons there is a considerable proportion of those who speak the low German dialect left by the Alemanni; Italian-speaking is confined exclusively to the two cantons of Ticino and the Grisons, while Romansch still comes naturally to some 40,000 inhabitants of the Grisons descended from an islet of Roman soldiers marooned in the high valleys. Burgundian French is the language on and around the Lake of Geneva. Baedeker, fortunately, is written in perfect English.

REALITY IN THE MARRIAGE SERVICE.

FOR a long time past many people have felt hesitation in regard to the treatment of marital relations contained in the preamble to the Church of England form of solemnisation of matrimony, and we are glad to note that in the form adopted for use at the recent Royal Wedding the phraseology was altered to bring it more into accordance with present-day sexual ethics. We set out in parallel columns the form as printed in the Book of Common Prayer and that adopted by the Dean of Westminster at the marriage service.

Old.	*New.*
First, it was ordained for the procreation of children, to be brought up in the fear and nurture of the Lord, and to the praise of His Holy Name.	First, it was ordained for the increase of mankind according to the will of God and that children might be brought up in the fear and nurture of the Lord, and to the praise of His Holy Name.
Secondly, it was ordained for a remedy against sin, and to avoid fornication; that such persons as have not the gift of continency might marry, and keep themselves undefiled members of Christ's body.	Secondly, it was ordained in order that the natural instincts and affections, implanted by God, should be hallowed and controlled; that those who are not called of God to remain unmarried should live chastely in matrimony and thus in holiness and pureness of living mankind should dwell together in families.
Thirdly, it was ordained for the mutual society, help, and comfort, that the one ought to have of the other, both in prosperity and adversity.	Thirdly, it was ordained for the mutual society, help, and comfort, that the one ought to have of the other, both in prosperity and adversity.

The change, which although not legalised has received the approval of Convocation, is welcome evidence of the spread of reality of thought on sex matters among all classes of the community. To all who have been brought up with a full knowledge of the place of sex in human economy it must seem a sordid view to speak of marriage as being ordained for a remedy against sin; nevertheless, the hallowing and control of the natural instincts and affections is an object which will command the loyal support of the medical profession.

INTERNATIONAL PROBLEMS OF WAR DISABLEMENT.

THE International Committee of Experts set up by the International Labour Office of the League of Nations to consider some of the problems of war disablement met in Geneva on March 2nd. Among the members of the Committee are Major J. B. Cohen, M.P., treasurer of the British Legion; Dr. Meier, of the German Labour Department; Dr. Foth, representing the disabled ex-Service men of Germany; Dr. Brandeisz, representing Austrian disabled men; Dr. Ripert, consulting physician to the military fitting centre of the Paris district; Mr. Cassin, Vice-President of the Union of French Disabled Men's Associations; Prof. Levi, representing Italy; Dr. Mammalella, President of the Italian Association of Discharged and Disabled Men; and Dr. Kikiewicz, of Poland. The Health Section of the League of Nations, the Red Cross organisations, and the Inter-Allied Committee of Disabled Men were also represented at the meeting. The intention is to discuss the organisation of an international prosthetic exhibition, to show the progress made in the manufacture and use of artificial limbs; another subject of discussion will be the administrative systematisation of prosthesis and orthopædics, to be considered from two points of view—first, a comparative study will be made of existing organisations and results in the various countries, and secondly, the future of the supply of limbs will be considered. The experts will be asked whether they think it desirable to maintain the supply organisations permanently, in collaboration with insurance societies and hospitals, for the benefit of men disabled in industry, and if so, in what form they should remain. Another question before the meeting is the organisation of medical treatment for disabled men—a question also to be dealt with by a comparative study of the existing national systems. Here again the Committee will discuss the methods by which men disabled in industry may receive the same benefits as men disabled in the war, and by which present legislation concerning industrial accidents can be modified to allow a permanent right to medical treatment for injured persons. Special consideration is being given to the position of disabled men living outside their own countries; reciprocal agreements for cases of this kind have been concluded by Great Britain and the Dominions, by Canada and the United States, and by Germany and Austria. The Committee is considering the possibility of wider adoption of agreements of this kind, and the practicability of securing a convention laying down fundamental principles for international protection of men disabled in the war.

THE ENERGY DISCHARGE OF THE HUMAN ORGANISM.

WE have been taught by the American School of Physiology—Benedict and others—that a man of average weight gives off at rest something like 1 kilocalorie (or 425 kilogrammetres) of energy per kilogramme of his body-weight per hour. During muscular work he gives off four or five or more times as much. One method of measuring it is by determination of the rate of oxygen consumption. Dr. A. D. Waller claims that the variations of CO_2 output with variations of respiratory quotient are small enough to be negligible without involving any serious error. The majority of physiologists do not agree with this and consider it necessary also to measure the oxygen direct. Dr. Waller's simple method of measuring the energy emission of the human machine by the rate of CO_2 production has accordingly not been regarded with much favour, except in France, where his contention that the shorter method involves (according to his statement) an error of only ± 5 per cent. is admitted by some, and his claim that the method is valuable for the rapid approximate estimation of human energy expenditure is being submitted to trial. Dr. Boigey, the medical officer in charge of the military gymnastic school at Joinville, has applied the short method to various kinds of physical exercise, marching, running, boxing, &c., and clinically to cases of pyrexia. He finds—e.g., for marching at a speed of 1·42 metres per second an expenditure of $CO_2 = 12{\cdot}8$ c.cm. subtracting from this gross value 3·32 c.cm. per sec. as the resting or basal value, gives 9·48 c.cm. for his 71 kilogramme subject—i.e., a net cost at this speed $= \frac{9{\cdot}48}{1{\cdot}42 \times 71}$ c.cm. per horizontal kilogrammetre—i.e., 0·094 c.cm.—a value not very divergent from that assigned by Waller and De Decker to the actual route-marching of Belgian recruits—viz., 0·1 c.cm. per horizontal kilogrammetre.[1] Dr. Boigey's results on subjects of pyrexia are remarkable. His gross values for the resting metabolism of such subjects are remarkably high—e.g., 24 and 17 c.cm. CO_2 per sec. in two cases—i.e., according to Dr. Waller's formula a resting metabolism of approximately 480 and 340 kilocalories per hour, values that

[1] Bulletin de l'Académie Royale de Belgique, December, 1920, La dépense physiologique mesurée chez le soldat en marche de route.

are many hundreds per cent. above the normal and that illustrate very clearly and simply the fundamental principle that pyrexia consists essentially in increased heat production and not merely increased heat retention. The principle of Dr. Waller's method is obviously susceptible of control by direct oxygen measurements, by means of Fredericq's oxygenograph, or of the beautiful apparatus for the clinical estimation of the rate of oxygen consumption that has recently been placed upon the market in this country by Messrs. Sanborn. We think that, in fairness to Dr. Waller's claims, it should be so tested and compared with the standard method by any who might profitably employ it, say for examination of exophthalmic goitre cases.

THE ROLL OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THE list of the Royal College of Physicians of London for 1922, which has just been issued, includes the names of 367 Fellows, 573 Members, and 14,177 Licentiates. The senior Member is now Dr. Clarence Cooper (1860), the senior Fellow is Dr. Peter Wallwork Latham (1866), and the single Extra-Licentiate is Dr. Edwyn John Slade King (1857). The Roll is now swelled by the addition of 982 diplomates in public health, 112 in tropical medicine and hygiene, 10 in psychological medicine, and 39 in ophthalmic medicine and surgery. The classified list shows that 2 Fellows and 9 Members practise, during part of the year at least, on the continent of Europe. In Asia there is 1 Fellow and 40 Members, in South Africa 1 Fellow and 4 Members, in Australasia 5 Fellows and 22 Members.

THE CALCUTTA SCHOOL OF TROPICAL MEDICINE.

ON Feb. 4th, at Calcutta, the School of Tropical Medicine and Hygiene and the Carmichael Hospital for Tropical Diseases were formally opened by Lord Ronaldshay, Governor of Bengal. In the course of his address Lord Ronaldshay commented on the satisfactory termination of the anomalous situation whereby medical men resident in India have hitherto been compelled to leave the home of tropical diseases to seek instruction in their treatment at Liverpool and Greenwich. Both he and Lieut.-Colonel J. W. D. Megaw, I.M.S., director of the school and superintendent of the hospital, paid tribute to the great work done by Sir Leonard Rogers, who put forward the original proposal of foundation in 1910, and devoted ceaseless effort during ten years to the establishment of these institutions. After reviewing the history of the school, Lieut.-Colonel Megaw described certain special features of the work; he instanced a series of weekly lectures on special subjects now in progress, given by distinguished visitors and by leading medical men in Calcutta to the staff and students of the school and to outside medical men. Monthly conferences of the staff are a valuable adjunct to the research work; post-graduate teaching and research, indeed, are the most obvious functions of the school, and a promising programme is already being carried out. A portion of the research side has already functioned for more than a year,[1] whilst a good beginning was made with the actual teaching work in November, 1921. So rapid was the response to the provision for post-graduate medical study that the problem of future accommodation has already taken shape. Before the end of the present year it is expected that the whole of the research scheme, and the complete course of instruction for the diploma in tropical medicine and hygiene, will be in full working order. The research work already effected is outlined in the recently-issued account of the school, which also contains the report for 1920 of the secretary, Major R. Knowles, and the director's report for 1921. Leprosy, kala-azar, hookworm disease, and filariasis have been the subjects of investigation; inquiry has also been made into the distribution of various types of dysentery in Calcutta, and into the causation of skin affections commonly met with in India. Results in some directions are reported as being very satisfactory. The account of the completion of the school closes with an expression of hope that means may be found whereby a separate institute of hygiene may be built next door to the existing buildings; the institute is at present housed in limited quarters in the School of Tropical Medicine, and its removal would both allow expansion of the school and enable the concentration in a single building of all activities of the department of public health.

[1] THE LANCET, 1920, ii., 1268.

THE HETEROMORPHOSES IN THE HUMAN BODY.

UNDER this title a valuable article by Dr. G. W. Nicholson appears in the current number of the *Guy's Hospital Reports*. After a description of an embryonic tumour of the kidney, which exhibits heteroplasia to an unusual degree, the author proceeds to discuss the various types of tissue malformations which may be met with in the human body under normal and under pathological conditions. He divides the heteromorphoses into the following groups: heteroplasias, the malposition of normal cells; prosoplasias, the abnormal differentiations of epithelium; heterotopic differentiations, including the formation of bone in abnormal situations, such as caseous material in necrotic epithelium; and metaplasias of epithelium. In each of these groups Dr. Nicholson describes cases which have come under his own observation, illustrating them by admirable drawings of microscopic preparations. Further, he has abstracted the literature of the subject very thoroughly, a list of no less than 53 references is appended to his paper, so that the monograph forms a very complete contribution to our knowledge of this difficult and interesting question. Variations from the normal of the developing cell may be due to two factors: they may result from vicious tendencies inherent in the cell, or they may depend upon abnormal influences brought to bear upon the developing cells by reason of abnormal conditions in their environment. Dr. Nicholson reasonably insists that environmental influences must be exhaustively considered before we fall back upon hypothetical properties inherent in the cells themselves, and he explains the conditions he describes as reaction to various external factors. It is a point of view which has an obvious bearing on many pathological processes, particularly the neoplasms, and would seem to be inherently sound.

GLOMERULAR FILTRATION.

RECENT measurements of the blood-flow through the kidneys show that it is much more abundant than was formerly supposed. If the blood-flow through the kidneys in man is taken at 2500 litres in 24 hours—a figure obtained by assuming that half the blood in the body can pass through the kidneys in one minute, a blood-flow which appears usual in rabbits—and the average urea content in human blood as 0·2 g. per litre, the total amount of urea which passes through the renal vessels each day is 500 g. But the daily excretion of urea is only about 30 g., or 6 per cent., of the quantity supplied to the kidney by the blood-stream. The relative proportion of plasma and corpuscles must be considered, as well as the fact that the blood urea is distributed equally between plasma and corpuscles in determining how much urea is actually available for excretion. If we assume that half the total volume of blood consists of plasma, then 12 per cent. of the available supply of urea is eliminated, which means that 88 per cent. of the plasma has not come into effectual contact with the renal cells, and is altered in its passage through the kidney only in so far as it is diluted with the fluid that has come in such contact. These considerations are set out in the current number of the *Journal of*

Physiology by E. B. Mayrs and J. M. Watt, who have described tests on experimental animals performed by them, having regard to the fact that urea is less efficiently eliminated by the kidneys than sulphates, phosphates, and creatinine. Urea is probably not a useless waste product, as is generally supposed, but a substance which is retained in the body until its concentration reaches some low threshold value, at which the excess begins to appear in the urine. Sulphate was therefore chosen in subsequent experiments as evidence of the proportion of plasma which comes into efficient contact with the renal cells. The assumptions made and the methods used are described and it is concluded that the glomerular filtrate, or the proportion of plasma which comes into efficient contact with the excretory cells, is from 20 to 25 per cent. of the whole plasma circulating through the kidney, but this proportion is subject to wide variations, sometimes rising to nearly 40 or falling to 6 per cent. These variations cannot be regarded as due to any one of the factors governing the activity of the kidney. It is suggested that in addition to the known physical factors, the permeability of the glomerular capsule may also vary under physiological conditions.

THE RETIRING M.O.H. OF MANCHESTER.

THE Manchester city council at a meeting held on March 1st placed on record their appreciation of the valuable services to the city of Dr. James Niven. It is mainly due to his efforts that the death-rate has fallen from 24·26 in the year immediately prior to his appointment to 13·82. On the recommendation of the Town Hall Committee, it was resolved that the applications which had been received for the post of medical officer should not be opened pending further consideration of the whole subject. Manchester has been singularly fortunate in its selection of its medical officers of health. In three-quarters of a century Manchester has had only three medical officers of health, and not the least distinguished of the trio, Dr. Niven, will retire at the end of the present month after 28 years' service. A native of Peterhead, like so many of his north countrymen, he graduated as Master of Arts in the University of Aberdeen, thence proceeded to Cambridge and was eighth wrangler, subsequently turning to medicine. Having acted for a time under the Metropolitan Asylums Board, he took up private practice in a suburb of Manchester and in 1896 became medical officer of health for the borough of Oldham and acted as director and medical superintendent of the fever hospital. After eight years' successful and originating activity in this borough, he was elected in 1894 to succeed Dr. John Tatham as medical officer of health for the city of Manchester. Great strides have been made in the sanitation of the city under Dr. Niven's directing and far-seeing outlook in regard to health matters in general, and more especially to his work in connexion with tuberculosis and in conjunction with the late Prof. S. Delépine on the milk-supply of Manchester. Dr. Niven will carry with him in his retirement the gratitude of the citizens of Manchester as well as the good wishes of the whole medical profession.

FATIGUE AND INFECTION.

IT is a general and popular belief that physical fatigue increases susceptibility to infection. There appear, however, to be no available statistical data bearing on the point. In the current number of the *American Journal of Hygiene*, vol. ii., p. 51, E. A. Oppenheimer and R. A. Spaeth record the results of some experiments in which rats were fatigued by being made to run till they would run no more in motor-driven revolving cages and their resistance to infection with the pneumococcus compared with that of normal animals. They obtained the surprising answer that fatigue, either before or after inoculation, definitely increases the resistance of the animals. With tetanus toxin the difference between the fatigued and normal rats is not so clear, but the former were certainly not more susceptible than the latter. But the authors are possibly wrong in their conclusion that their results contradict the popular belief. In the first place, the factors which condition infection into a mucous membrane may well be quite other than those which determine fatality after intraperitoneal inoculation: fatigue may influence one in one way and the other in another. And in the second place "fatigue" is so largely a psychological process that it is difficult to be sure that the rats were more tired than a man would be after a spell of the lively exercise which is supposed to be good for his resistance. Is it not also a "fact," according to general belief, that the fatigue which promotes the influenza is not the physical state after a football match but the jaded body and mind which comes from too much battering of the nervous system and suprarenals? To reach even acute fatigue of a high order, some stimulus beyond the fascination of keeping still on a *trottoir roulant* is probably wanted. A bored puppy out for a walk gets tired in quite a different way from the same animal after rabbits. The work illustrates the difficulties of applying the experimental method to problems which are not plainly formulated. For clearly it is most necessary that our impressions and beliefs about "fatigue" and human infection should be translated into definite evidence and that we should define more closely what our terms mean. The problem would then be ready for experimental examination.

THE LIMITS OF BODY TEMPERATURE.

DURING the recent influenza epidemic a statement was circulated in the daily press that a temperature of 114° F. had been recorded in the case of a servant girl, who recovered without any lasting damage. In appraising such reports of extremely high temperatures, which recur from time to time, several factors need to be taken into account. Many of our readers will have met with malingerers who have placed the thermometer on the radiator, in hot water, or inside a hot poultice, or who have compressed the bulb with the teeth, so as to force up the mercury. Faulty thermometers must also be allowed for; it is possible so to shake a thermometer as to break the mercury thread above the trap, thus leaving a space, with the result that the top of the meniscus records a temperature far above the true one. Definitely erroneous thermometers are also insufficiently rare. Apart from all such possibilities, what is the highest real temperature compatible with life? An exact figure certainly cannot be given, not only because of individual differences, but because a temperature that would be supportable to some tissues would kill others. And it should also be borne in mind that while the body temperature of all warm-blooded animals approaches with singular constancy a norm of about 100° F., the smaller birds and mammals in general have a slightly higher normal temperature than the larger species. The normal temperature of a swallow is about 104° F. But there is little doubt that for man the temperature of the body cannot well rise above 115° F., for even a short time, and 111° F. may be placed at the highest temperature compatible with life. At this temperature some permanent injury is certain, because the nerve cells are definitely changed by heat coagulation at about 110° F. Accounts of temperatures above 115° F. certainly cannot be accepted; perhaps immediately after drinking hot liquids the local temperature in the mouth may be as high as, or higher than, this, but these are not real body temperatures. The heart, for one thing, probably fails at about 108°–109° F.

FRIEDMANN'S TUBERCULOSIS VACCINE.

IN the March number of *Medical Science* there is a review by Dr. J. D. Rolleston and Dr. C. Lillingston of recent publications on tuberculosis, among which Friedmann's vaccine continues to figure prominently, though certainly not with distinction. It seems to have found a sleuth-like vigilator in Prof. J. Schwalbe, editor of the *Deutsche medizinische Wochenschrift*, who

has done useful work in collecting and publishing the experiences of internists, pædiatrists, and surgeons. Many remedies for tuberculosis possess the negative virtue of harmlessness, but even this faint praise is denied Friedmann's vaccine, which has been credited with decided aggravation of symptoms in certain cases. According to Prof. B. Heymann and Dr. M. Koike,[1] two similar preparations have been put on the market in Germany; one is Dr. Piorkowski's "Chelonin," the other Dr. Baum's "K.T.B. Vaccine." Both profess to contain turtle tubercle bacilli, and both enjoy a considerable vogue. Imitation being the sincerest form of flattery, Friedmann's denunciation of these preparations as plagiarisms of his own seems ungrateful. Heymann and Koike have examined numerous samples of all three preparations, and their report on all of them is unflattering. One of Friedmann's ampoules contained cocci, the proportion of living to dead germs was very variable, and the total number of germs also varied greatly. Four of 24 of Baum's ampoules contained cocci and Gram-negative rods, and of 22 "Chelonin" ampoules only three contained living turtle bacilli. It did not mend matters that one of the ampoules containing no living turtle bacilli proved to be contaminated with live cocci and spore-forming rods. The reaction which has set in against Friedmann's vaccine is evidenced by a notice,[2] according to which the 800,000 marks allocated by the Ministry for Science, Art, and Education in its budget for 1921 to the investigation of this vaccine has been diverted to the study of tuberculosis in general. It is hardly necessary to advert to the methods of publicity which have done so much to discredit Friedmann's remedy with the bulk of the medical profession in Germany, except to discourage similar adventures elsewhere.

OPHTHALMIC QUACKERY.

IN his presidential address at the opening of the last session of the Bristol Medico-Chirurgical Society Mr. Cyril Walker made some interesting remarks on this subject, which appear substantially in the *Bristol Medico-Chirurgical Journal*. For centuries those afflicted with eye disease have been peculiarly liable to fall into the hands of quacks. In England in the Middle Ages, as in India to-day, couching for cataract was commonly carried out by itinerant quacks. The immediate result was often strikingly good, but ultimately the last state of the eye was almost always worse than the first. In the eighteenth century the "Chevalier" Taylor, a qualified surgeon and oculist to many kings, practised as an itinerant quack on a large scale; he travelled about from town to town in great state and inviting the gentry to witness his cures. In recent times quack sellers of eye-drops have continued to do a flourishing trade. It is not quite easy, said Mr. Walker, to define quackery, for it includes dishonest practice by qualified men no less than a pretension to skill which they do not possess on the part of the unqualified. Indeed, qualification is no guarantee of skill unless we know the nature of the qualification. The best definition of quackery would appear to be dishonesty in practice, a definition which might apply to qualified men who in their dealings with patients put the interests of their own pockets before those of their patients; and also to those who, whether qualified or not, undertake tasks for which they know they have not the requisite training or skill. As Mr. Walker remarks, a good deal of quackery, both in England and America, is associated with the prescribing of spectacles by opticians. Glaring instances in which purchasers have been fleeced often come to the notice of ophthalmic surgeons, who are subsequently called upon to revise the optician's prescription. And yet, as Mr. Walker says, most opticians are competent and honest, and on the whole the public have benefited by the improved knowledge of those of them who have passed the examinations set by the Spectacle Makers' Company and other bodies. Whether or not these examinations ought to include sight-testing is a moot point on which the opticians, represented by their journal, *The Optician*, take up a definite position and the bulk of ophthalmic surgeons another, diametrically opposed to it. A committee of the Council of British Ophthalmologists is considering the subject and we await its report with interest. Meantime there are two points on which the public should be informed. One is that the optician cannot be so well equipped for the prescription of glasses in children and in difficult cases of adults as the ophthalmic surgeon, as the former is precluded from the use of mydriatics. Secondly, a certain proportion of those with defective sight owe their disabilities to disease, either of the eye or the general system, and with these the optician is necessarily incapable of dealing.

[1] Zeitschr. f. Tuberk., 1921, xxxv., 161.
[2] Deutsche medizinische Wochenschrift, Jan. 19th.

MEDICAL INSPECTION OF SCHOOL-CHILDREN.

SOME arresting figures are contained in a report just issued by the Education Committee of the L.C.C. on the extent to which medical inspection of school-children is carried out under the L.C.C. system. During the year 1921 no less than 294,552 children were examined in detail at elementary schools, when 113,732, or 38·6 per cent., were noted as requiring treatment for one or more defects. Teeth, vision, and nose and throat complaints accounted for most of these cases. In addition to elementary school examinations, 2255 children were examined at special schools, of whom 40·6 per cent. were found to need treatment for defects other than the disability which rendered attendance at a special school necessary. 73,470 children were seen during the year as urgent cases, and 26,425 of these were found to require treatment. The figures under the head of "re-inspection" are possibly even more illuminating as to the effect on the health of the community of the Council's activities. During 1921, 175,096 cases came up for review. At the first re-inspection there were 112,776 cases, of which 45·2 per cent. were recorded by the school doctors as discharged. At the second re-inspection 62,320 cases were examined, and of these, 60·3 per cent., or 32 per cent. of the original number, were reported as having received treatment, or being no longer in need of it. Combining the results of the first and second re-inspections, 77·2 per cent. of the children had been dealt with. The results of the year 1921 are the best since the Council undertook the inspection and treatment of children. Out of every 100 cases reported to have received treatment, 73 obtained it under the Council's scheme; the remaining 27 went to private practitioners or dentists, or to hospitals not under the scheme.

WE regret to announce the death from heart failure following influenza of Dr. Benjamin Moore, recently Whitley professor of biochemistry in the University of Oxford, and for the period of the war an active and fertile member of the medical research staff under the National Health Insurance scheme.

THE report of the proceedings of the conference, convened on Jan. 19th and 20th under Sir Frederick Willis, to consider in what directions lunacy administration and the treatment of persons suffering from mental disease may be improved, is now obtainable from H.M. Stationery Office for 2*s.* 6*d.*

CENTRAL MIDWIVES BOARD.—At the examinations held in February last the number of candidates examined was 669, of whom 526 passed, the percentage of failures being 21·4.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting will be held in the Board Room of the Miller General Hospital, Greenwich, to-day, Friday, March 10th, at 8.45 P.M. The President, Dr. C. T. T. Comber, O.B.E., will occupy the chair. Mr. Ernest B. Dowsett, L.D.S., will give a lecture on Pyorrhœa Alveolaris, illustrated by lantern slides.

DENTAL BOARD OF THE UNITED KINGDOM.

AT a meeting of the Dental Board in Committee, held on Feb. 14th at 44, Hallam-street, London, W., the Rt. Hon. FRANCIS DYKE ACLAND, M.P., presided, and 11 out of 12 members of the Board attended.

Standard of Qualification.

A communication was read from the Privy Council notifying approval on Jan. 16th of the Regulations adopted on Dec. 9th, 1921, and adding:—

"As regards Chapter 5 of the Regulations—'The Prescribed Examination'—I am to take this opportunity of stating that their Lordships would deprecate the enforcement of any higher standard of qualification than is absolutely necessary for the protection of the public."

The appointment of Mr. G. P. Blizard as Assistant Registrar was approved.

The Registrar reported that, the prescribed conditions having been duly fulfilled, the following names had been restored to the Dentists Register, erased in conformity with Sections 12 of the Dentists Acts, 1878 and 1921: Frank Allday, Charles A. Lightfoot, and Francis Youngman.

Report on Registration.

The Registrar made the following report in regard to registration:—

The Regulations were received from the Privy Council on Jan. 16th, and were published on Jan. 27th.[1] The staff were called together on Jan. 25th in order that the whole procedure might be explained to them, and the office was opened for the receipt of applications on the 27th.

The applications for forms under the various headings have been, approximately, as follows: For those in practice for five years, A. (2), 3093; Members of Incorporated Dental Society, A. (4), 1700 were sent to the Secretary; Pharmaceutical Chemists, &c., A. (6), 307; Dental Mechanics, B. (1), 356; Those in practice for less than five years, B. (5), 119; Companies, C. (1), 20; Directors, D., 23.

The applications having been considered satisfactory, the names of 17 applicants who have been in practice for over five years have been forwarded to the *British Dental Journal* for publication in its next issue, and, if no objections are received, the persons concerned will be entitled to registration on about March 15th.

A large number of applications have been received from the Incorporated Dental Society; 41 certificates have been issued, and the remainder are being dealt with as quickly as circumstances permit. Of the Pharmaceutical Chemists, applications are complete; of the Dental Mechanics, three applications are complete; of the persons in practice for less than five years, two applications are complete; of the Companies and Directors, no applications have been returned.

A question has been asked as to whether the names of Pharmaceutical Chemists, Dental Mechanics, and Practitioners for less than five years are to be published. With regard to the first, the point is not so much as to the good character, because the appearance of the name in the list of the Pharmaceutical Society may be taken as evidence of this, but as to whether the statements in regard to substantial practice in dentistry are accurate. With regard to the other two categories, it might be that a person who was confident of passing the examination, and who thought than an objection might be made if his name appeared in print, would apply under one of these headings, and the instructions of the Board are asked for on these two matters.

Several applications for registration as mechanics have been refused on the ground that the applicant has not reached the prescribed age. Complaints have been made to the Registrar that in several cases these persons have been mechanics for some years, and that lack of means prevents them from endeavouring to obtain a licence in dentistry, and the Registrar has been asked if it will be possible to provide any assistance. The reply given is that at present it is quite impossible to answer the question, but that the best thing to do is to pass the prescribed preliminary examination as quickly as possible in case financial help can be given at a later stage.

There has been a large demand for the Regulations, and 1571 copies have been sold.

Following a suggestion from the British Dental Association it was agreed that the names of all applicants for registration under Clause 3 of the Dentists Act, 1921, should be published.

[1] THE LANCET, Jan. 28th, p. 193.

REPORT OF THE MANCHESTER AND DISTRICT RADIUM INSTITUTE.

THE report by Dr. Arthur Burrows on the work of the Radium Institute in Manchester for the year ending Dec. 31st, 1921, begins by pointing out that the year has been one of transition, inasmuch as the Institute has been transferred from the Manchester Royal Infirmary to a separate building in Nelson-street, where, largely owing to the generosity of Sir Edward Holt, a complete hospital for radium treatment has been constituted. This transfer has brought about a number of changes, including the provision of 13 beds used solely for radium treatment. 783 cases presented themselves during the year with a view to radium treatment; 564 were cases of malignant disease, of which 60, or 12 per cent. (exclusive of rodent ulcer), were rendered free from signs and symptoms of the disease. This includes 4 cases of carcinoma of the uterus previously inoperable, which were rendered operable and the operations performed. One case of carcinoma of the anus, 5 cases of carcinoma of the breast, 27 cases of carcinoma of the cervix of the uterus, 7 cases of carcinoma of the mouth and tongue, 12 cases of carcinoma of the skin, 4 cases of sarcoma, 3 cases of endothelioma, and one other make up the 60 cases.

An analysis of over 2500 cases, treated at the Institute between the years 1915 and 1919, shows that of these patients 1753 were suffering from cancer, 267 from rodent ulcers, and 575 from various conditions which are usually described as non-malignant, although a considerable proportion of them will, if allowed to progress, terminate in death. 135 cases of malignant disease, the vast majority of which was beyond operation, have remained alive for periods varying from two to over six years, and are well at the present time.

Rodent ulcers, benign tumours, exophthalmic goitre, uterine hæmorrhage, Hodgkin's disease, keloid, spring catarrh, and lupus vulgaris have all also shown a large percentage of gratifying results. The technique of radium treatment is steadily improving, and Dr. Burrows anticipates that in the future the results of treatment will be still further improved.

Non-Malignant Conditions.

The section on the radium treatment of non-malignant conditions is interesting and is here reproduced at length:—

Exophthalmic Goitre.—Fifty-two of these cases are recorded as cured, that is to say, all symptoms and signs of disease have disappeared, except sometimes some slight exophthalmos, for over two years, and only one recurrence is recorded. Many cases have already when they come for treatment definite myocardial failure, which may persist, and although the hyperthyroidism is cured they cannot be recorded as cured cases. The application of radium is a prolonged process and much patience is needed because the treatment may last from 2 to 3 years.

Hodgkin's Disease.—The cases sent by physicians and surgeons for treatment by radium may be divided into those under 25 years of age and those middle-aged. The former give excellent results. Three of them have been alive and well between 6 and 7 years, one between 4 and 5 years, three between 3 and 4 years, and one between 2 and 3 years. The middle-aged cases seem almost hopeless except for a good palliation. Perhaps they are two different diseases.

Keloid and Vicious Scars.—These nearly always yield to radium treatment, and although some mark must always remain, many of the results are so good that 16 have been classed under the heading "cured." Treatment of this condition also tends to be rather a long process.

Spring Catarrh.—With care and perseverance radium cures almost all these cases. In fact, it is the only satisfactory treatment of this hitherto incurable disease.

Cavernous Nævus.—Fifty per cent. of these cases are cured practically without any mark remaining at the site of the tumour. Radium, if persevered with, always stops the growth of these nævi and reduces their size.

Capillary Nævi.—In the treatment of this condition the difficulty is to know when to stop. They can always be made paler, but if treatment is kept on too long telangiectases will

appear. Occasionally a perfect result is obtained in a small lesion.

Excessive Uterine Hæmorrhage.—Radium is a specific for this condition. The Manchester Radium Institute records only one failure, and this patient did not submit to a second application. Two patients died of other causes. In middle-aged women the menses can be stopped entirely, but if by using a small dose the risk of the necessity of a possible second application of radium is taken, with young women menstruation often returns to normal, and cases are recorded in which they have married and had children subsequently.

Lupus Vulgaris.—Contrary to general expectation, a good proportion of lupus vulgaris cases, if not too advanced, can be cured by radium.

The physicist to the Institute reports that during the year 526 emanation plates and 1281 emanation tubes were made.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Medical Men in Political Life.

IN Austria medical men seldom entered into politics before the upheaval of 1918; at present five Social Democrats and three members of other parties in the National Assembly have medical degrees; municipal boards and local administrative corporations in the provinces now frequently include medical members. The National Assembly contains no more than 3 per cent. of doctors, which explains the easy passage of measures detrimental to the interests of the profession. Such medical organisation as we have encourages its members to stand for election wherever opportunity offers. In Germany there are seven medical men amongst roughly 380 members of the Reichstag; in England there are 11 doctors in over 700 Members of the House of Commons; but in France, I believe, nearly 10 per cent. of members of the Legislative Assembly are medical men.

Statistical Data of the Krankenkassa in Austria.

During the recent prolonged conflict between the sickness insurance clubs and their medical staffs, certain statistics were made known, which, being authoritative, show very clearly how these institutions are working. The figures given comprised the year 1919 and part of 1920 and showed the changes relating to 540 out of 740 such clubs; 785,095 members, of whom 342,994 were females, is the average figure for the time under consideration. Out of each 100 members, 46 became ill and received medical attendance for 30·4 days each. Taking the whole number of members in consideration, it must be stated that each male was ill for 13·8 days and each female for 11·39 days, including childbirth cases. Of the total female members 2·15 per cent. belonged to the latter group. The mortality was fairly high, being 1·97 per cent. of the grand total. The financial position of these clubs is best judged by the figures referring to income and expenditure. Whilst the first amounted to nearly 75 million kronen a year, the latter reached 67½ million (36 million for sick pay, 3½ million for medicines, hospital charges over 4 million, funeral expenditures over 3 million, and 8 million for doctors' fees and control staff, the remainder being spent in administration). Sick pay went up by 300 per cent., and other items in about the same ratio, whilst medical fees only advanced 30 per cent. on the previous year. This was the chief reason for the recent dispute, and the profession gained a great deal of support, especially among the working classes, when the public was informed of this discrepancy between the other increases of payment and the medical fees.

Anti-Alcohol Movement in Austria.

For some weeks a very energetic anti-alcohol campaign has been conducted in this country by the authorities and by private organisations, for purely financial reasons. Expenditure on alcoholic beverages has reached such a high figure that it actually endangers the public welfare. Better payment of manual work has prompted the labourer not to increase his standard of life but to drink more wine and beer. The Government tried vainly to prevent the increase by refusing to grant new licences to public-houses. The bulk of wine and beer is imported from abroad, and prices rose to fantastic figures; more than 6 million pounds sterling—a sum equal to the total expenditure of the country in that period—went abroad last year in payment for alcoholic liquors. To check the alarming spread of drinking a sum of 50 million kronen is to be spent in leaflets, through travelling lecturers and by exhibitions. The next step will be an increase of the alcohol duty to a prohibitive figure, in order to throttle the import, production, and consumption of alcoholic beverages. The education of adolescents is recognised as a most important step, and coöperation with existing private temperance organisations is encouraged by the Government.

The Race Factor in Immunity.

In an interesting communication to the Jewish Board of Guardians in Vienna a medical contributor points out that the Jewish race displays certain deviations from the health standard of the population amongst which it is more or less scattered. In two or three Austrian cities, where large numbers of Jews live in the same manner and under the same conditions as the Gentile population, the former still show distinct features as regards pathology and immunity. The average duration of life is longer than amongst the Gentiles, no doubt owing to lower infantile death-rate in spite of, or because of, the smaller number of children in the average Jewish family. Jews are mostly town-dwellers, living in overcrowded districts, yet they are less prone to tuberculosis. Syphilis is rather infrequent—perhaps because of circumcision, for gonorrhœa is as frequent as with Gentiles—and alcoholism is also rare. The real domain of the Jew is nervous disease and disturbances of metabolism; he is more frequently diabetic than his Gentile fellow-citizen, and more prone to rheumatism and gout. In the Jew, psychoses, hysteria, and neuroses predominate over organic nerve disease; as a rule he is more delicate, but more enduring, than the Gentile, and under equal conditions he has a better expectation of life.

Pathological Changes after Mushroom Poisoning.

In Austria during the last few years many people have died of mushroom poisoning. At a recent meeting of the newly-formed "Anatomo-Pathological Society of Vienna" Dr. Sternberg read a paper embodying the results of his investigations into 19 fatal cases, in which he examined chiefly the histo-pathological changes of the liver. He discriminates between acute cases living up to five days after poisoning, and chronic cases, or rather subacute cases; the longest observation lasted 25 days. He saw 14 acute cases, which gave the following picture: first degenerative, afterwards infiltrative fatty changes; isolated necrosis of the cells, never very extensive; very often regenerative processes in the liver-cells were observed. The changes bore a very marked resemblance to intoxication with phosphorus, but were absolutely different from acute yellow atrophy of the liver. In the subacute cases (living 8 to 25 days) the central parts of the lobules were completely necrotic, whilst the periphery showed regeneration, like that in the recrudescent atrophy of the liver. This suggests that the original mushroom poison does not produce the necrosis, for the acute cases do not show it; it must, on the contrary, be assumed that a subsequent metabolic change occurs. The clinical picture of the subacute fatal cases shows a gradual improvement and a latent stage; on the sixth or seventh day rapid loss of function suddenly ensues, soon followed by death. Prognosis is therefore always very uncertain, and effective treatment avails only in the first day or two, before the poison has had time to produce irreparable changes.

Remarkable Range of a Singer's Voice.

At a recent meeting of the Austrian Phonetic Society Prof. Réthi demonstrated a well-known singer, 44 years old, who shows quite an abnormal vocal range and claims to be able to cover five octaves. The lowest note produced by him is the contra F with 42 vibrations,

being two octaves and four notes deeper than middle C. There is on record only one person able to sing the same note, the bass Fischer, who lived between 1680 and 1730. The highest notes Mr. Pritá, the present singer, can produce are the treble F, two octaves and two and a half notes over middle C, and very often even the next A (1740 vibrations per second)—a full note higher than the highest note of Madame Patti. The voice of a normal singer covers, as a rule, only two octaves or a little more. Mr. Pritá's larynx is peculiar, in that the vocal cords are very short and broad. A phonographic record of his voice has been taken and will be examined analytically in the phonetic institute formerly directed by the late Prof. Exner.

Feb. 13th.

THE BRITISH INDUSTRIES FAIR.

THE British Industries Fair, which was opened on Feb. 27th under the auspices of the Department of Overseas Trade at the White City, Shepherd's Bush, must have given great satisfaction to both visitors and exhibitors alike, for not only did it show that British manufactures and products can compare more than favourably with those of other countries, but it afforded at the same time an opportunity for British makers and dealers to appraise each others' products and methods, healthy competition being stimulated.

To fully enumerate all the excellent exhibits of 900 contributors is obviously impossible; even to single out the products, appliances, and miscellaneous articles which have an interest for medical men would occupy more space than there is at our disposal; we must content ourselves with brief reference to some of the more important displays.

Chemical and Allied Products.

It is difficult to classify the exhibits under different headings, as many of the firms represent various, if allied, interests; Messrs. Burroughs Wellcome and Co., Snowhill, E.C., for example, in addition to their drugs, had a wide assortment of medical appliances, dental instruments, medicated wool, and so forth. Particularly worthy of notice were their kharsivan and neokharsivan, organic arsenical products which they placed on the market at the beginning of the war to meet the need which arose owing to the fact that salvarsan was unprocurable. Moogrol, a mixture of esters of acids of the chaulmoogric series, for intramuscular injection in the treatment of leprosy, was another drug of interest exhibited by this firm, which also had a fine display of sera, vaccines, and tuberculins. Boots Pure Drug Company, Ltd., Station-road, Nottingham, showed a classified selection of antiseptics, acriflavine being particularly prominent, anæsthetics and analgesics, alkaloids, antipyretics and hypnotics; some useful flake preparations, iron and quinine, and iron and ammonia citrate, and a wide range of glycerophosphates, as well as medicinally pure glucose for intravenous injection. The British Drug Houses, Ltd., Graham-street, London, N., made a prominent feature of their barium sulphate, a pure preparation specially packed with the object of preventing accidents from the administration of the soluble salts, as well as their contramine (di-ethyl-ammonium-di-ethyl-di-thio-carbamate) for use in venereal diseases, and sodium chaulmoograte for use in leprosy. Cresineol was another preparation of which this firm made a special feature, both as an external antiseptic and as a gastric and intestinal disinfectant.

In this section the Gas Light and Coke Company, Frederick-place, Old Jewry, E.C., the South Metropolitan Gas Company, Old Kent-road, S.E., and the United Alkali Company, Liverpool, also displayed very fine collections of disinfectants. There were also attractive exhibits by the British Dyestuffs Corporation, Manchester, Messrs. W. J. Bush and Co., Ashgrove, Hackney, E., Messrs. Evans, Sons, Lescher, and Webb, Liverpool, Messrs. Howards and Sons, Ilford, and Messrs. May and Baker, Battersea.

Medical and Surgical Instruments and Appliances.

Under this heading may well be mentioned an important display of X Rays Ltd., 11, Torrington-place, Gower-street, W.C., including apparatus used in deep X ray therapy according to the Erlangen technique. There was also a new model diathermy apparatus for surgical and medical work giving heavy outputs, designed by Mr. Mortimer A. Codd, and a portable high tension transformer for bedside use which gives an output of 10 milliamperes with the Coolidge tube. This apparatus, which is constructed in three parts, can be easily carried upstairs by one person, can be run from a lamp socket wherever an alternating current is available, and can be used on both D.C. and A.C. circuits. Other firms exhibiting in this section were the Surgical and Optical Manufacturing Company, 35, Charles-street, Hatton-garden, E.C., Messrs. John Bell and Croyden, 50, Wigmore-street, W., and Messrs. William Gowlland, Morland-road, Croydon, while Messrs. Cory and Grundy, 384, Wandsworth-road, the McKay Artificial Limb Company, 218, Blackfriars-road, S.E., and the P.K. Arm, Ltd., 8, Southampton-row, W.C., showed many ingenious and useful artificial limbs.

Reference may also be made to Goddard's Patent Hammock Bed Company, Borough High-street, S.E., the Bed Benet-Fit, 76A, Chancery-lane, W.C., who make a simple appliance for attaching to the bottom of a bed for preventing a restless invalid from disarranging the bedclothes, and the Berkefeld Pump-Filter Co., Sardinia House, Kingsway.

HOUSE-TO-HOUSE COLLECTION FOR HOSPITALS:

THE "WILFRID ALLEN SCHEME."

AT the London Guildhall on March 1st, under the auspices of the Hospitals Welfare Society, Alderman E. C. MOORE, of the City of London, presided at a meeting of borough mayors and hospital representatives for the purpose of hearing Mr. Wilfrid Allen explain the working of a collecting scheme which has been in successful operation at Lewisham, Deptford, and Greenwich for the past two years.

In opening the meeting the CHAIRMAN remarked that most people would prefer a voluntary system for the support of hospitals without reliance on rates or taxes. But it should be remembered that a would-be donor of a guinea to a hospital had to expend 30*s.* out of his income and a donor of two guineas £3, 9*s.* and 18*s.* respectively going in income tax. That was a heavy drain on hospital resources. He presumed that the area which it was intended to cover by the scheme about to be explained was that of King Edward's Hospital Fund for London: he would himself like to see it tried on a still wider area.

Mr. ALLEN commenced by reading paragraphs 14 and 15 of the Cave Report which advocates the voluntary principle, adding his conviction that feeling throughout the country was in favour of keeping the voluntary system intact. He was sanguine enough to believe that before long in one way or another the hospitals would grow out of their financial troubles. The scheme he was about to describe originated some three years ago as a result of a feeling among a Hospitals Fête Committee that for the greater part of the year their energies were wasted, and a Hospitals Welfare Society was started whose object was to get at people in their homes. Collecting was commenced in 1919 in Lewisham, Deptford, and Greenwich, but not in the most prosperous parts of the three boroughs, and many difficulties occurred, so that less than £2 was actually collected in 1920. No originality was claimed for the house-to-house collection idea, but some credit was due, he thought, to the way in which ladies had been induced to take a permanent interest in the movement. At first many resigned after a few weeks service, mainly through not understanding what was required of them. An honorary canvasser was then appointed as recruiting officer to obtain lady workers; later, six canvassers were appointed on commission, and in January, 1921, a sum of £245 was collected in pence. In January, 1922, the collections rose to £402 and the February total exceeded the January by some £15. The six canvassers had now been reduced to three with a weekly commission, plus a certain sum for travelling expenses. There was no difficulty now in finding collectors.

The area covered by the scheme had been divided into ten districts, each of which was presided over by a lady of

tact and, if possible, of social position, known as a Divisional Superintendent. The division was divided into five sections each with a supervisor, and each section again into eight subsections with a unit supervisor and a number (eight to ten) of voluntary collectors and workers under her. A collector visited each week 20 or 30 houses, the collections being made in a sealed box. The boxes were collected personally by the Unit Supervisor, who in turn was called upon by a section Supervisor, and the latter received a visit from the division Supervisor, proper receipts being given and accounts made out in each case. An essential feature of the system was that the operations were carried out week by week and the higher officer in each case called upon the lower. The money was paid into the nearest bank, these banks once a week sending the money to a central bank. The system worked automatically and any person was at liberty to inspect the books. During the past 12 months £5200 had been allocated to local hospitals. Expenses were more than covered by whist drives, dances, fairs, and other socialities. It was intended to extend the collection to workshops and business houses where no direct contribution to hospitals had been reported, for investigations had shown that only about 10 per cent. of houses were subscribing direct to hospitals. In every district an effort would be made to get hold of the other 90 per cent.

Several delegates spoke in general approval of the scheme and only one, who objected to the voluntary principle, against it, while a representative of the League of Mercy thought that possibly overlapping of effort would injure the collections. Captain Sir ARTHUR CLARKE, of the Seamen's Hospital, and Sir CHARLES STONE, of the Miller Hospital, who respectively proposed and seconded a vote of thanks to the chairman, referred in terms of high praise to the work which the Hospitals Welfare Society had already accomplished.

Public Health Services.

THE THIRD "CARDINAL POINT."

TEN years or more ago at the Representative Meeting of the British Medical Association a policy was enunciated, it will be remembered, in the form of six "Cardinal Points," whereof the third insisted that medical and maternity benefits were to be administered by local health committees, and not by the friendly societies. It will be well to bear this in mind.

In the summary of conclusions in the Geddes Report, Part I., the third conclusion runs as follows:—

3. That as regards National Health Insurance, the State has progressively accepted additional burdens and additional costs when they occurred, and has not reaped any benefit from the "windfalls" which accrued to the funds of the approved societies as a consequence of the war. We think that, as soon as opportunity offers, such burdens should be transferred to the insurance organisations, where they might well be compensated for, in part at any rate, by betterment in the actuarial position and that a very small increase in contribution should be imposed to meet the additional cost of medical and other benefits now borne by the State in excess of its proper share of two-ninths.

The additional burdens referred to include the increases of the doctors' remuneration from an original capitation fee, estimated at 4*s*. 6*d*., to 7*s*. in 1912, when the keeping of records was added to the duties, the Women's Equalisation Fund, the bonuses to practitioners during the war, and the increase of the capitation fee to 11*s*. in 1920.

The statutory cost of medical benefit was fixed by the 1920 Act at 9*s*. 6*d*., and this figure includes drugs and mileage allowances. The actual cost is 13*s*. 9*d*., and the excess of 4*s*. 3*d*. is met by the Exchequer grant. This excess has been recently reduced to 2*s*. 6*d*. by the reduction of the capitation fee to 9*s*. 6*d*. In his report to the Geddes Committee (First Interim Report, Appendix B) Sir Alfred Watson considered that the additional charges could not come out of the accumulated surpluses in insurance funds without involving a fundamental change in the system of national health insurance. He thought that to raise the cost of medical benefit from 9*s*. 6*d*. to 12*s*., the contributions must be increased. The amount produced by 1*d*. a week without State grant would be about 4*s*. a head, and the Government Actuary recommended that 2*s*. 6*d*. of this should be applied to medical benefit, leaving 1*s*. 6*d*. for subscriptions to hospitals and the provision of nursing.

In the Bill which was recently tabled in skeleton form the Minister of Health proposed to increase the contributions by ½*d*. from each side and to provide dental benefit; but at the instance of the consultative council of approved societies this Bill has been withdrawn. Sir Alfred Mond has now stated that the approved societies are to take over the burden until the end of 1923 and that a Bill to embody this proposal is being drawn up.

If the excess over the 9*s*. 6*d*. is to be provided out of the surpluses of the approved societies it seems clear that the capitation fee will be reduced by them at the end of 1923. Further, the societies by the new scheme will have a direct interest in the drug fund and the contribution to the mileage fund, and will come into close relation with the panel committees in dealing with what is called excessive prescribing. The approved societies have made no public explanation of their attitude, but it would seem probable that the control, which the Ministry now exercise through the Exchequer grant, may be transferred to them. For if they pay the piper they will call the tune. The societies appear to be very ready to take on the burden. What is the price demanded? What is the object of such a fundamental change? Medical men may be reminded of the third "Cardinal Point."

SCHOOL MEDICAL INSPECTION IN HAMPSHIRE.

Timely appearance greatly enhances the value of health officers' reports. In his annual report for 1921, as school medical officer to the Hampshire County Council, Dr. R. A. Lyster lays stress on the fact that the provision of treatment by the authority for visual defects has increased the sense of parental responsibility, so that head teachers and parents have vied with one another in bringing forward cases which appear to need treatment. Good work in carrying out refractions has thus been done at small cost, and 805 pairs of spectacles were supplied at no cost to the authority. Public medical work is carefully planned out in Hampshire. The same medical officer who attends the maternity centre and becomes familiar with the conditions of the child in his earliest days, also examines him when he becomes of school age, and as this doctor is further the tuberculosis officer and the medical attendant at the venereal diseases clinic, there cannot possibly be any overlapping or failure to coördinate. The medical officer who examines the children also pays attention, at the time of his visit, to the sanitary condition of the schools. Great progress has been made in the "cleanliness" scheme, and encouraging experiments are being made with a special soap for dealing with verminous conditions. Nevertheless the call for economy has interfered with the work. Thus, owing to shortness of staff, the routine examination of entrants, intermediates, and leavers was not completed till Christmas, and the chief aim of inspection—namely, securing treatment by following up—has been left over to a large extent. In 1922 it is proposed to limit examination to the groups of entrants and leavers. Good use has been made of the Lord Mayor Treloar Hospital at Alton for dealing with children crippled by tuberculosis, but owing to the lack of facilities in the county the expensive system has been adopted of sending children to London for special treatment for other crippling defects.

EUGENICS EDUCATION SOCIETY.—A lecture on the Reduction of the Birth Rate as a Necessary Instrument for the Improvement of the Race will be delivered by Mr. Harold Cox, at the rooms of the Royal Society, Burlington House, Piccadilly, London, W. 1, on March 14th, at 5 P.M., Major Leonard Darwin presiding. All interested in the subject are invited to attend.

Correspondence.

"Audi alteram partem."

FIXATION ABSCESS.

To the Editor of THE LANCET.

SIR,—In an article on this subject in THE LANCET of Jan. 7th Major A. T. Todd suggests that there are probably factors, other than an increase in the formation of leucocytes, involved in the beneficial effect obtained from this mode of treatment. Certain considerations, although largely inferential in character, may be put forward in this connexion.

It is known that the polymorphonuclear leucocytes contain a proteolytic enzyme which may be readily extracted from them, and which is presumably set free into the surrounding medium whenever an accumulation, associated with a destruction, of leucocytes takes place in an area of the tissues. This enzyme is of the nature of a tryptase (i.e., it is most efficient in a slightly alkaline medium), and its action is inhibited or restrained by the antitryptic capacity of the blood. The accumulation and destruction of leucocytes in a focus of infection will lead to a liberation of the enzyme into the surrounding tissue-fluids and, should a concentration be reached adequate to overcome the inhibitory power of these fluids, to a certain degree of proteolysis. This is seen in its complete form in suppuration, but it is conceivable, and indeed probable, that in foci which do not suppurate, and also in the tissue round the fluid portion of a suppurating lesion, a certain amount of proteolysis occurs, and protein-degradation products are formed. These latter may pass into the more peripheral parts of the lesion, where the accumulation of leucocytes is not sufficiently great to cause active digestion. In the large majority of infective processes the antitryptic power of the blood is increased, and this increase will lead to a greater restriction in the amount of proteolysis occurring in the focus of infection. The extent of the inhibitory effect will, however, be dependent, not only upon the antitryptic power of the blood, but also upon the conditions prevailing in the lesion; it will be reduced practically to nothing in any part of this which has become completely cut off from the circulating blood, but will exert its full effect in the peripheral and more important part of the infected area. Here the degree of proteolysis and the concentration of protein-degradation products will be a function of the antitryptic capacity of the blood.

Now, it is a matter of common experience in bacteriology that bacteria prefer to obtain their nitrogenous pabulum from the proteoses and peptones rather than from undigested proteins, and indeed that, in the case of many pathogenic and potentially pathogenic micro-organisms, the former are, in vitro, essential to cultivation. It will not appear unreasonable to infer from this that the presence of the products of proteolysis will probably facilitate the multiplication of bacteria in vivo; and that, although the accumulation of leucocytes in a focus of infection is, on the whole, a beneficial and protective process, it may in this respect be detrimental to the host. The detrimental effect will, however, be partially restrained by the antitryptic power of the blood, and will become less detrimental as this inhibitory power is increased. If all this be so, it will be evident that anything which leads to a sudden increase in the antitryptic power of the blood will lead also to a sudden diminution in the supply of the more favourable pabulum of the infecting microbes. We cannot, of course, conceive this as being able to inhibit the further growth of the bacteria, but, assuming the issue of the combat to be trembling in the balance, we may conceive it as being able to turn this issue in favour of the host.

I have no actual knowledge as to whether a fixation abscess would cause an increase in the antitryptic power of the blood, but having paid a certain amount of attention to the changes in this function under various conditions, I think that it would most probably do so, since such an increase is the rule whenever a localised destruction of tissue has occurred, whether through bacterial infection, through injury, or through the inoculation of substances giving rise to a local reaction. Most of the examples given by Major Todd are cases of pneumonia, and in this condition the antitryptic power is, in my experience, always markedly augmented, but it is probable that the supervention of a lesion such as he describes would lead to a still greater enhancement, and so produce on the infection the effect that I have suggested above.

The question as to whether the antitryptic factor has any effect also on the enzymes of the bacteria themselves is at present undecided, but Sir Almroth Wright has called attention to, and demonstrated experimentally, the great importance of this factor in the progress of infected wounds: and it should undoubtedly be regarded as a potential, and perhaps as a considerable, element in the antibacterial armament of the animal organism.

I am, Sir, yours faithfully,

E. BEATON.

Public Health Laboratories, Cairo, Feb. 10th, 1922.

AMAAS OR ALASTRIM?

To the Editor of THE LANCET.

SIR,—Dr. J. Fehrsen, of Benoni, in his letter appearing in THE LANCET of Feb. 25th, claims that the term alastrim should not be employed to designate the form of small-pox hitherto known as amaas. Unless those who employ the former term can justify it by asserting that it identifies a recently discovered type, there certainly seems no object to be gained by its use. That this is not merely a matter of priority in nomenclature as employed by Drs. de Korte and Ribas, is evident from the fact that in your correspondence columns some time back there appeared a letter from a well-known medical officer of health, pointing out that the task of differentiation of small-pox, in its minor aspects, from vesicular diseases simulating it, was now further complicated by the necessity for diagnosis between amaas and alastrim. Drs. Aldo Castellani and A. Chalmers, in their book "Manual of Tropical Medicine," p. 1491, quote seven synonyms (including amaas) for alastrim. Dr. Bruce Low, in his report, "The Incidence of Small-pox Throughout the World" (1918), asserts that "strains of small-pox infection current in different parts of the world vary in their degree of virulence"; and draws attention to a "mild clinical type" found in North America, New Zealand, and Australia. Dr. J. C. McVail, in his work "Half a Century of Small-pox and Vaccination," insists on the importance of taking into account the type of small-pox in judging the influence of measures to combat epidemics; and holds that, in 1902–05, whilst in London the virulent "North African type" was dealt with, in the provinces the mild "American type" prevailed.

The origin and nature of types thus variously indicated seemed to me of interest; and relying largely upon the valuable statistics at disposal in Dr. Bruce Low's report, I compiled a map illustrating the incidence of current types and strains, and read a paper on the subject before the Royal Society of Tropical Medicine and Hygiene on Feb. 20th, 1920. I found whilst it was unnecessary to regard North Africa as the place of origin of a special type of small-pox, Dr. McVail had rightly called attention to its virulence, and I concluded that the term "American type" connoted amaas; seeing that the connexion of America with Africa and small-pox derived from that country is historically correct, and was insisted upon by Hirsch. America, therefore, may safely be given the benefit of the doubt of being the birthplace of its "mild type"; Dr. Fehrsen has a better right to claim the onus for South Africa, and consequently the retention of its correct terminology.

Irrespective of the obvious advantage of not mixing terms where diagnosis is at stake, the practical point with which the practitioner in this country, as well as in America, is concerned is the distinguishing of amaas from varicella. This necessity is especially the case when it is remembered (as contended by McVail in regard to the epidemic of 1902–05, and as has been frequently reported in America) amaas may prevail side by side with a virulent type. The fact that amaas refuses to wax materially in virulence whilst readily recognisable small-pox has this tendency, leads to the shaking of belief in its being in reality a type of small-pox.

Yet, Dr. W. G. Armstrong (Report of the Director-General of Public Health, New South Wales, 1913; published 1915) has placed on record the results of experiments conducted with the aid of Drs. Burton Cleland and E. W. Fergusson, which leave no doubt of the identity of amaas with small-pox. Perhaps, when we understand under what conditions variola virus is deprived of infectivity as vaccine by passage through bovines, we shall also admit that a virus capable of thus behaving may, under other unknown conditions, lose its virulence for the internal organs whilst still exhibiting its influence on the skin.

I am, Sir, yours faithfully,

W. G. KING,
Colonel, I.M.S. (ret.)

Hendon, N.W., Feb. 25th, 1922.

*** A recent article on alastrim in the U.S. Public Health Reports, written by Dr. W. C. Rucker, chief quarantine officer on the Panama Canal, gives the following list of synonyms: Varioloid-varicella, amaas, Kaffir milk-pox, Sanaga small-pox, West Indian modified small-pox, pseudo-small-pox, Weisse Pocken; and a note by the Editor of the Reports is worth quoting in full:—

"Leake and Force, of the United States Public Health Service, in their studies on the immunological relationship of alastrim (1921), inoculated monkeys and rabbits, using crusts and pustule contents from alastrim patients in Jamaica and Haiti. They summarised the results of their experiments as follows:—

"A vesico-papular eruption was produced in monkeys by inoculation both with crust and with vesicle contents from alastrim patients. The animals were protected against reinoculation with alastrim and vaccine virus. Rabbits inoculated with alastrim showed no eruption, but were almost completely immune to vaccine virus. Rabbits previously inoculated with vaccine virus gave positive intracutaneous reactions to small-pox crusts, alastrim material, and vaccine virus, but remained negative to chicken-pox crusts.

"The fact that definite immunity to vaccinia is produced by previous inoculations with alastrim is additional evidence of the essential identity of alastrim with small-pox. (Reprint No. 669 from the Public Health Reports, June 24th, 1921, pp. 1437–1443.)"

THE DEPARTMENTAL COMMITTEE ON THE CAUSES AND PREVENTION OF BLINDNESS.

To the Editor of THE LANCET.

SIR,—This Committee, which started investigations in the autumn of 1920, last year issued an interim report on the effect of lighting in the cinema studios upon the eyes of the artists. The next subject which they investigated was ophthalmia neonatorum. I believe that the material part of this report has been completed for some time, but not published, and has been held over until other injuries and diseases of the eye have been dealt with. It is a little difficult to see why a comparatively unimportant part of the report, such as lighting in cinema studios, should have been published as an interim report, whilst the most important and urgent subject of it has been held over for departmental reasons. In the meantime numbers of children are being allowed to go blind from ophthalmia neonatorum for want of the necessary precautions to ensure prevention, early advice, and proper treatment of this disease. If it is from motives of economy that the part of the report on this subject is not issued, the cost of the care to the State of one blind child would more than repay for its publication.

It is to be hoped that the Ministry of Health will reconsider their decision and issue interim reports as the subjects are dealt with by the Committee.

I am, Sir, yours faithfully,

M. S. MAYOU.

Harley-street, W., March 6th, 1922.

A DIPLOMA IN TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Sir Robert Philip's letter to THE LANCET of March 4th is very much to the point; the "multiplication of Special Diplomas in Limited Departments of Medicine" is hardly advisable, while an additional certificate to the Diploma of Public Health might meet the case. This specialising in tuberculosis leads only a short way, numerous posts are offered for men who have had a minimum of six months experience in tubercle, whereas there is nothing offered for men who have had 15 years or more in this special work. The salaries offered are small, and in very few cases mention any increase. If the long experienced man dares to apply for such a post, he is not considered owing to his age, or to the fact that he has "encumbrances." Men accepting junior posts should bear in mind the limited number of senior posts in tuberculosis. Many tuberculosis medical officers have had to give up this work, go into private practice, or general public health. These facts show that it is hardly worth while to work for a special diploma in tuberculosis. I am, Sir, yours faithfully,

G. BASIL D. ADAMS, M.D., D.P.H. Oxf.

Farm Colony, Kinson, March 6th, 1922.

To the Editor of THE LANCET.

SIR,—With reference to your annotation in THE LANCET of Feb. 25th I would call your attention to the advanced courses on tuberculosis which were instituted by the University of Manchester in 1912, in connexion with the course for the Diploma in Public Health. The course, which extended over six months, included laboratory practice, supplemented by demonstrations and lectures at the public health laboratory; instruction in administration at health offices recognised by the University; and clinical instruction at tuberculosis dispensaries, hospitals, and sanatoria recognised by the University. The main if not the only difference in principle between this post-graduate course and that outlined by the Welsh National School of Medicine is that six months' part-time clinical work is required for the Manchester certificate instead of three months; moreover, all medical men are eligible to take a course immediately after qualification should they so desire.

Owing to the war, these courses have been interrupted, but the certificate has been obtained by some 16 men, the majority of whom also hold the D.P.H. of this University—I am, Sir, yours faithfully,

E. J. SIDEBOTHAM,
Acting Director.

Public Health Laboratory, Manchester, March 1st, 1922.

MENTAL AFTER-CARE.

To the Editor of THE LANCET.

SIR,—The report of the annual meeting of the Mental After Care Association, which appears in your current issue, calls attention to the fact that 7206 persons were discharged last year from our public asylums as wholly recovered, and 3276 in whom recovery was partial. The work of the Association enables many of these ex-mental patients to resume their normal life and activities. The Association needs at the present time all the help that it can get, and while cooperation is welcomed from whatever direction I cannot find in the subscription list that any one member of the National Council for Lunacy Reform has contributed to the funds. A body that assumes to take a leading part in matters relating to mental diseases must surely know of the work that

has been accomplished by an association supported with the assistance of the Board of Control, the L.C.C., and many boards of guardians. Moreover, the Association's example has been followed in Europe, as well as in America and Japan. This, therefore, is a striking example of the difficulty of eliciting practical sympathy for its support.

I am, Sir, yours faithfully,

H. RAYNER, M.D.,
Chairman of the Mental After Care Association.

March 4th, 1922.

A POST-GRADUATE DIPLOMA.

To the Editor of THE LANCET.

SIR,—Is it not probable that lack of incentive in form of special academic reward is one reason why post-graduate work fails to make the appeal it should to the home practitioner? It might be satisfactory to have something to show on paper or parchment as the result of labours in clinic and classroom. Post-graduate interest in London badly needs a stimulus, and I suggest the institution of reasonably accessible academic distinctions for the "old boys" as a step in the right direction.

I am, Sir, yours faithfully,

London, W., March 6th, 1922. EDWIN L. ASH, M.D.

GERMAN APPARATUS.

To the Editor of THE LANCET.

SIR,—The letter by "A Manufacturer of British Apparatus" in your issue of Feb. 25th, dealing with X ray material, raises a point which requires elucidation. The writer complains of German competition and its deadly effects upon British scientific industry. Personally, this problem is constantly with me in an acute form. On the one hand, one earnestly desires to purchase British manufactures, and whenever possible this is done, yet it is found that certain apparatus is made cheaper, and in some cases better by alien firms, and in the present state of hospital finance we simply must purchase the more economical article. Only this week, I ordered a special type of high-power microscope lamp. The price by Reichert, the Viennese firm, was something like six times less than the British quotation. The biochemical laboratory of a hospital at Cambridge, so I am told, required a new chemical balance. The alien firm quoted £30 for a beautiful instrument fitted with a microscope for viewing the vernier and weights turned out in quartz. The British firm quoted £60 for an article not so good.

This is what we have to contend with. The hospitals are short of funds partly because the new rich will not subscribe to anything like the extent that the former patrons did. The new rich are mainly of the manufacturing class. It seems, therefore, that the remedy lies in the hands of the manufacturing class—namely, a smaller margin of profit, increased efficiency, and more liberal support for the hospitals which would enable the institutions to purchase British apparatus at reasonable prices.

Incidentally, the worker also must do his share, and he is bestirring himself, but to my mind he is much the less potent cause of a deplorable state of affairs.—I am, Sir, yours faithfully,

A. GEOFFREY SHERA, M.D. Camb.,
Pathologist, Princess Alice Hospital, Eastbourne.

Feb. 28th, 1922.

A DIAGNOSTIC GESTURE IN NEURASTHENIA?

To the Editor of THE LANCET.

SIR,—I have several times noticed, in ex-Service men under treatment for "neurasthenia," a connexion between a certain gesture of the hands and a definite type of patient. From the position of rest when seated, with elbows, wrists, and fingers slightly flexed, and the ulnar side of the forearms resting on the upper part of the thighs, the movement is a sort of jerk of one or both hands; in detail there is extension of the wrist and abduction of the forearm, the finger-tips travelling about a foot. On completion the movement is reversed, but is much slower. There may be an interval, varying from a few seconds to some minutes, before the next movement, or the movements may be continuous; in this case there is no complete return to the resting position, but a to and fro movement, like playing a concertina. The gesture accompanies the patient's description of his symptoms, feelings, or experiences, and varies in frequency and extent directly with the amount of emotion present.

The cases with this gesture have all been men with the obsessions, phobias, *folie du doute*, and, frequently, hallucinations characteristic of compulsion hysteria; most of them were young single men who have not been exposed to any great danger, but whose illness has been attributed to heat-stroke, malaria, or influenza, or who have broken down during training at home. They are all very talkative and many have a most retentive memory for all details of their interviews, usually numerous, with various doctors. The patients themselves appear quite unaware of the habit, which I have come to regard as almost pathognomonic. Of course, it does not occur in all compulsion cases.

I am, Sir, yours faithfully,

E. C. PLUMMER.

Neurological Clinic, Plymouth, March 6th, 1922.

CO-EDUCATION IN MEDICINE.

To the Editor of THE LANCET.

SIR,—The causes of the opposition encountered by the pioneers of medical education for women seem obscure to us now, and the reasons that were advanced have not stood the test of time; they were probably rationalisations, or reasons adduced to support a judgment already formed. The decision of the London Hospital authorities to cease admitting female students, because of the awkwardness of dealing with unpleasant subjects before a mixed class, depends upon a recognition of emotional inhibitions, though the experience of medical schools in the provinces, as well as in Scotland, Canada, and Australia, where mixed classes have been the rule for a long time, would suggest that these inhibitions are a local survival. The tendency of to-day is to remove certain restraints upon discussion, and our profession is properly looked to for a lead in regard to subjects, such as venereal disease, which were quite recently held to be unmentionable in public; the medical man or woman must be prepared to view these subjects clearly and without timidity. As a matter of fact, medical training has always had the effect of removing any feelings of embarrassment that would hinder the proper investigation, say, of physical disorders of the sex organs, and it is becoming necessary that a similar attitude should be cultivated towards the mental aspect of sex functions. The cultivation of such an impersonal and scientific attitude to patients of the opposite sex can hardly succeed if it fails between medical students of opposite sex or between a teacher and a mixed class.

The coming together of students of both sexes seems to have had no striking consequences. A fair number of marriages take place, as would happen in any similar grouping of young adults, and the female partner probably retains her connexion with medicine, which would be unlikely to happen in the case of her marrying an outsider. No disadvantageous results have been noted, and the association of men and women during the study period can only add to that knowledge of mankind and womankind, which is as necessary as the more definite objects of the curriculum. In the case of those medical schools that maintain the exclusion of female students the factors leading to the exclusion are probably multiple and indefinite. If the interests of the school are best served by following that principle, it is difficult to question the right to do so. The athletic side of a school, which may be affected by an influx of women, has great influence upon the type of men who enter it, and there is, perhaps, enough diffidence among young

men to make many of them averse from placing themselves in a position where their inhibitions might be offended. The fear of competition within the sphere of the school can scarcely be a rational, even if unacknowledged factor, for the individual student can only measure his competition by the number of competitors, irrespective of their sex; if the teaching capacity of the school is filled it matters little what the sex proportions may be: only an extreme feminist would claim that the man fears the superior mental equipment of the woman.

We must await the result of the experiment that is now being carried on in London. Time will soon show what developments take place in the mixed and the exclusive schools respectively, and whether the latter will derive sufficient benefit to justify the continuation of their policy.

I am, Sir, yours faithfully,

March 6th, 1922. A LONDON TEACHER.

To the Editor of THE LANCET.

SIR,—The manœuvres of the 13 London medical schools, each fighting for existence, are beguiling enough to the spectator, though doubtless the rivals find the struggle grim. If by the sacrifice of a few pawns the knights gain greater freedom of movement the interests of the side may indeed be advanced. It is true that the despised pawns might some day become queens, and gloriously decide the contest—but at what expense to knightly prestige! The London Hospital authorities have intimated to the University of London a decision, which was not unexpected, to limit entry in the future to male students. It may be taken for granted in all such delicate matters of policy that, though the decision may be right the reasons offered to the general public are almost certainly wrong. It is probably still desirable to retain some schools exclusively for one sex, so as to allow free choice; but it must not be forgotten that it is mainly since the advent of mixed education that confidence between medical men and women has become established on a firm basis, and that professional relations between them have developed any real cordiality. I quote your own words[1] substantially. I am, Sir, yours faithfully,

March 6th, 1922. A WOMAN GRADUATE.

*** We have nothing to add to the article which our correspondent quotes. We announced the decision of "The London" on Jan. 7th last. Local fluctuations of opinion must occur where a recent movement of large effect is in question.—ED. L.

The Services.

ROYAL NAVY MEDICAL SERVICE.

Surg. Comdr. W. P. Walker is placed on the Retired List at own request.

ROYAL NAVAL VOLUNTEER RESERVE.

Temp. Surg. Lieut. H. O. Martin, late R.N., to be Surg. Lieut.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. and Bt. Col. R. S. Hannay to be temp. Col., vice Lt.-Col. and Bt. Col. H. G. Martin, C.M.G.

Lt.-Col. J. C. Kennedy to be temp. Col. whilst spec. empld.

Maj. T. E. Harty retires on ret. pay and is granted the rank of Lt.-Col.

Capt. C. L. Balkwill retires, receiving a gratuity.

The undermentioned are restd. to the estabt.: Maj. H. S. Dickson, from the half-pay list, and Capt. G. D'R. Carr.

Temp. Capt. J. H. Porter relinquishes the actg. rank of Maj.

Lt. (temp. Capt.) F. K. Escritt to be Capt.

Officers relinquishing their commns.: Temp. Capts. J. G. Shaw, O. T. J. C. de H. Clayre, and R. Stephens (retain rank of Capt.); Temp. Lt. M. Carleton (retains the rank of Lt.).

[1] THE LANCET, 1920, ii., 860.

ARMY DENTAL CORPS.

Lts. (temp. Capts.) to be Capts.: C. T. Hastings, J. J. Boyle, and M. J. O'Reilly.

CHANNEL ISLANDS MILITIA.

Surg. Lt.-Col. P. B. Bentlif, from Medical Corps, to be Medical Officer.

The following relinquish their commissions: Surg. Lt.-Col. W. Falla (granted the hon. rank of Surg. Col.); Surg. Maj. A. C. Stamberg (granted the hon. rank of Surg. Lt.-Col.); Surg. Capt. C. A. Bois (granted the hon. rank of Surg. Maj.); Surg. Capts. H. J. Shone and C. N. Le Brocq retain their rank.

TERRITORIAL ARMY.

The undermentioned Lt.-Cols. to command the Genl. Hosp. shown against their names: F. E. A. Webb, from 2nd E. Genl. Hosp. to 1st E. Genl. Hosp.; H. Collinson, from Genl. List to 2nd N. Genl. Hosp.; and D. J. Graham, 2nd Scottish Genl. Hosp.

The undermentioned to be Lt.-Cols., and to command the Genl. Hosp. shown against their names: Majs. G. N. Biggs (4th Lond. Genl. Hosp.), (Bt. Lt.-Col.) G. S. Jackson (from North'n Fus., 1st N. Genl. Hosp.), D. Shannon (from Genl. List, 4th Scottish Genl. Hosp.), J. H. Ray (2nd W. Genl. Hosp.), and (Bt. Lt.-Col.) E. J. Maclean (3rd W. Genl. Hosp. Capts. (Bt. Maj.) R. C. Dun (from Genl. List, 1st W. Genl. Hosp.), H. J. Walker (from Genl. List, 2nd E. Genl. Hosp.), and (Bt. Maj.) A. H. Gosse (3rd Lond. Genl. Hosp.).

Capt. P. W. Maclagan (late R.A.M.C.) to be Capt.

Maj. R. B. Rutherford (late R.A.M.C.) to be Capt., and relinquishes the rank of Maj.

Lt. S. McNaughton to be Capt.

Maj. J. G. McCutcheon resigns his commn. and retains the rank of Maj.

Capt. J. Morham resigns his commn. and retains the rank of Capt.

Capt. A. A. Gunn, having attained the age limit, is retired and retains the rank of Capt.

Lt.-Col. G. F. Whyte relinquishes his commn. and retains the rank of Lt.-Col., with permission to wear the prescribed uniform.

Officers relinquishing their commns. and retaining their rank except where otherwise stated: Majs. J. McHoul, S. Martyn (with permission to wear the prescribed uniform), and H. R. Moxon. Capts. G. E. Nash (granted the rank of Maj.), A. W. Stott (granted the rank of Maj.), H. D. McCross McCrossan, T. A. Fisher, H. L. Munro, F. Roberts, and A. Radford (granted the rank of Maj.).

The undermentioned, having attained the age limit, are retired, and retain their rank except where otherwise stated: Majs. J. F. Crombie (granted the rank of Lt.-Col.), J. M. Cadell, G. W. McIntosh, A. Roberts, F. N. Grinling, A. L. S. Tuke, and S. English; Capts. A. F. Wilson, O. L. Scarborough, E. O. Libbey, R. V. C. Ash (granted the rank of Maj.), D. C. Bremner (granted the rank of Maj.), J. Lilwall-Cormac, T. W. Cole, J. Livingston, and T. J. Thomson.

Officers relinquishing their commns. and retaining their rank: Majs. J. M. Duncan and H. D. Davis; Capts. W. J. Phillips, F. N. Walsh, L. G. Pearson, G. R. Rickett, and L. M. Ladell.

1st S. Genl. Hosp.: Capt. F. Barnes, having attained the age limit, is retired and retains the rank of Capt.

4th S. Genl. Hosp.: Maj. R. Coombe, having attained the age limit, is retired and retains the rank of Maj.

2nd W. Genl. Hosp.: Capt. F. C. Moore, having attained the age limit, is retired and retains the rank of Capt.

TERRITORIAL ARMY RESERVE.

The undermentioned, having attained the age limit, are retired and retain their rank: Capts. J. B. Smith, A. L. McCully, and J. Aitken.

Maj. D. E. Dickson relinquishes his commn. and retains the rank of Maj.

Capt. D. P. H. Gardiner relinquishes his commn. and retains the rank of Capt.

ROYAL AIR FORCE.

T. M. Walker is granted a temporary commission as a Flight Lt.

A. C. Ransford is granted a temporary commission as a Flight Lt.

Capt. H. J. Higgins, Army Dental Corps, is granted a temporary commission as a Flight Lt. while attached for duty with the R.A.F.

INDIAN MEDICAL SERVICE.

The King has approved of the retirement of Lt.-Col. T. S. Ross.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At a congregation held on March 4th Grace 9, embodying the recommendations contained in a report of the Special Board for Medicine on amended regulations for the Degree of Bachelor of Medicine, was carried by a large majority.

The following degrees were conferred:—

M.B. and B.Ch.—R. A. Olphert, Caius; S. J. Cowell, Queens'; and W. S. Gross, Jesus.
M.B.—W. H. Marshall, Pembroke.
B.Ch.—E. Donaldson, Trinity.

UNIVERSITY OF LONDON: ADVANCED LECTURES IN MEDICINE.—Professors in the Faculty of Medicine of the University of Paris will lecture (in French) at the Royal Society of Medicine, 1, Wimpole-street, W. 1, at 5 P.M., as follows:—March 20th, Prof. H. Roger (Dean of the Faculty): Subject, Les fonctions du Poumon; Chairman, Sir S. Russell-Wells, M.D. March 23rd, Prof. A. Chauffard: Subject, Syndrome Humoral de la Goutte; Chairman, Sir Thomas Lewis, F.R.S. March 27th, Prof. P. Duval: Subject, Données actuelles de la Chirurgie Intra-Thoracique; Chairman, Mr. W. Sampson Handley, M.S. Three other lectures, of which particulars will be announced later, will be given by French professors at the Royal Society of Medicine on May 22nd, 25th, and 31st, at 5 P.M.

UNIVERSITY OF MANCHESTER.—Dr. E. J. Sidebotham, acting director of the public health laboratory, has been appointed a member of the Board of the Faculty of Science.—The following scholarships have been renewed for a further year: Ramsbottom Scholarship, W. K. Rooney; Salford Scholarship, Doris I. Field.—The University prize in medicine has been awarded to Hilda M. Linford.—The students on Shrove Tuesday collected in the streets, tram-cars, theatres and other places of entertainment the sum of £1037 for the local hospitals.

HOSPITALS in the County of London or within nine miles of Charing Cross desiring to participate in the grants made by King Edward's Hospital Fund for London for the year 1922 must make application before March 31st to the Hon. Secretaries of the Fund at 7, Walbrook, London, E.C. 4.

ROYAL INSTITUTION.—On March 16th, at 3 P.M., Dr. P. Chalmers Mitchell, begins a course of two lectures on the Cinema as a Zoological Method. The Friday evening discourse on March 17th will be delivered by Prof. A. P. Laurie on the Pigments and Mediums of Old Masters.

ROYAL MICROSCOPICAL SOCIETY.—A meeting will be held in the lecture hall, 20, Hanover-square, London, W. 1, on Wednesday, March 15th, at 7.30 for 8 P.M., when the following papers will be read: Mr. Joseph E. Barnard, the Future of the Microscope in Medical Research. Dr. H. Hartridge, Monochromatic Illumination; A Low-Power Eyepiece with Large Field.

LEAGUE OF RED CROSS SOCIETIES.—The second General Assembly of the 37 national societies, which are members of the League of Red Cross Societies, is to meet in Geneva on March 26th–31st. The British Red Cross Society will be represented by Sir Arthur Stanley, Sir Napier Burnett, and Sir George Newman. Sir Claude Hill, the director-general of the League, will present the report of the secretariat, which describes the contributions made by the Red Cross in its peace-time campaign against ignorance and disease. The assembly will then proceed to discuss a programme of popular health education, with special emphasis on the rôle of the public health nurse and of the Junior Red Cross.

NATIONAL HEALTH INSURANCE IN IRELAND.—The administration of national health insurance in Ireland is at present in a state of serious confusion. It is stated that under the Government of Ireland Act, of 1920, health insurance was one of the excluded services—that is to say, it was to be carried out by the British Government until such time as the governments of Southern and Northern Ireland should agree to accept it as a joint service under the Council of Ireland. The Northern Parliament immediately pressed for the transference of the insurance service without delay and the British Government has, by order in Council, transferred the service to the Government of Northern Ireland as from March 1st. There appears to be some doubt as to the legality of this step, and the executive committee of the Association of Approved Societies has advised its societies to ignore all instructions reaching them from the Government of Northern Ireland.

ROYAL LANCASTER INFIRMARY.—The annual report states that the income for the past year exceeded the expenditure for the first time since the outbreak of the war, the income being £10,099 and the expenditure £9530. There still remains a debt of £3132.

SOUTHPORT INFIRMARY.—The income this year has more than covered the expenditure. This is largely owing to the increased assistance from the wage-earning classes and the introduction of a system of part payment by patients. The chairman at the annual meeting on March 4th stated that the appointment of wage-earning representatives on the board of management had been a step in the right direction.

IRISH MEDICAL SCHOOLS AND GRADUATES' ASSOCIATION.—The forty-fourth annual meeting and St. Patrick's Day dinner of this Association will be held on March 16th at Pagani's Restaurant, Gt. Portland-street, London, W. 1, when Major-General Wallace Kenny will resign the presidency to Dr. J. A. Macdonald. Mr. Edward Shortt, Home Secretary, will be the special guest at the dinner, on which occasion the Arnott gold medal of the Association will be presented to Lieut.-Colonel Robert McCarrison, I.M.S. Dinner tickets (9s. each) may be obtained from Dr. F. Howard Humphris, 8, West Chapel-street, London, W. 1.

MANSLAUGHTER BY A MEDICAL MAN.—Mr. E. E. Willis, a medical practitioner, was convicted at Durham Assizes of the manslaughter of a miner's wife upon whom he had operated for eclampsia. The evidence of relatives showed that they had refused to allow the prisoner to operate at 6.30 o'clock in the evening because in their opinion he was under the influence of alcohol. About 10.30 P.M. he returned apparently better, and operated, administering chloroform with the assistance of his housekeeper. It was believed by those present that the patient was not completely anæsthetised. After two hours he had not completed the operation. Dr. A. D. Kelly was called in and made it a condition of attending that the prisoner should leave. The patient died two days later. Dr. Kelly was of the opinion that there was no necessity for the operation to have been attempted. Dr. B. H. Spilsbury told the jury that it was very unwise of the defendant to have operated singlehanded, and that he could only account for the injuries received by the deceased as being due to want of reasonable skill and care owing to the condition of intoxication of the prisoner which had been described. In passing a sentence of 12 months' imprisonment in the second division, Mr. Justice Bray intimated that he took into account the professional consequences which must follow upon such a conviction.

ILLUMINATING ENGINEERING SOCIETY.—At a meeting of this society at the house of the Royal Society of Arts on Feb. 28th Mr. Leon Gaster, hon. secretary of the society, delivered an address in which he drew attention to the importance of good factory lighting for the health and safety of workers, and as a condition of efficient and rapid work. Experience, he said, had shown a close connexion between the prevalence of accidents and lighting conditions; the cost of proper lighting was usually less than 1 per cent. of the cost of production, and expenditure to secure it was therefore a good investment, to be regarded as a national asset. Ideal requirements should enable work to proceed at night with the same ease and safety as in good daylight. The necessary conditions had been admirably summarised in the reports issued by the Home Office Departmental Committee on Lighting in Factories and Workshops. General experience indicated that for ideal requirements there are four main conditions to be satisfied—namely: (*a*) sufficient illumination; (*b*) constancy and uniformity of illumination over the working area; (*c*) placing and shading of lights so that no inconvenience and prejudicial effects are experienced from "glare"; (*d*) placing of lights so as to avoid inconvenient extraneous shadows on the work. There would naturally also be special conditions to be fulfilled, arising from the peculiar nature of any industrial process, and a form of illumination that is ideal for one process may be less satisfactory for another. The Home Office had for a number of years taken a great interest in industrial lighting, and in this respect this country was in advance of the rest of Europe, but the subject was now receiving attention in various countries, and interchange of views is most desirable, in order that any recommendations may be based on commonly accepted general principles. A useful step in this direction was taken by the appointment, at the first technical session of the International Illumination Commission last year, of an international technical committee to review the whole subject. Ultimately it was to be hoped that an international code on industrial lighting may be framed. Mr. Gaster mentioned that this question is receiving attention from the Section of Industrial Hygiene of the International Labour Office established by the League of Nations at Geneva.

ROYAL SUSSEX COUNTY HOSPITAL.—The annual meeting was held on Feb. 23rd and the report for the year may be claimed as encouraging. A keener interest in the welfare of the institution has been shown throughout the district which it serves. The hospital had an overdraft at the end of 1921 and had sold out all its available securities, since the response to an appeal for funds, though not unsatisfactory, was not sufficient to meet the demands of an institution with 225 beds. In-patients during the year 1921 numbered 2928 and of these 53 per cent. contributed towards their maintenance. The total received from this source, including small payments by out-patients, amounted to £4700. Forty-eight members of the Sussex Provident Scheme were received during the year, 8 as in-patients and 40 as out-patients, and the cost to the hospital has been defrayed from the funds of the scheme. Out-patients in 1921 showed a big increase of 1051, compared with the figures of the previous year, but the number of casualty cases treated decreased by 794.

U.S.A. DEPARTMENT OF HEALTH: RETIREMENT OF DR. ROBERTSON.—The issue dated Feb. 4th of the *Bulletin* of the Chicago School of Sanitary Instruction contains the letter of resignation addressed to the Mayor of Chicago by Dr. John Dill Robertson, who for seven years has held the post of Commissioner of Health of that city. Two years ago (THE LANCET, 1920, i., 976) we dealt fully in our columns with his report for the years 1911–1918, which was a record of energetic reform in many directions. Recalling in his letter the achievements of the city department of health during his tenure of office, Dr. Robertson states the following facts: Seven years ago numerous cases of typhoid were caused in Chicago by contaminated water; to-day the supply is completely chlorinated, and the typhoid incidence is lower than that of any other large city in the world, whilst "the lowering of the morbidity and mortality from this disease represents a reduction of 87½ per cent." Seven years ago, too, less than two-thirds of the Chicago milk-supply was pasteurised; to-day it is all pasteurised, except about 2 per cent., which is produced under supervision of the Chicago Milk Commission and known as "certified milk." More than 1000 milk licences were rescinded in the course of this safeguarding process, the result of which has been a reduction of infant mortality from 1 death in 7·4 to 1 death in 12 of infants born, and a saving of 300,000 babies each year. Complete birth registration has been accomplished. The Chicago death-rate for 1921 was 11 per 1000—the lowest point ever attained. Dr. Robertson emphasises the necessity of careful organisation for the teaching of positive health to the masses, and concludes his letter by an expression of the utmost confidence in the ability of his successor, Dr. Herman N. Bundesen.

GLASGOW ROYAL MENTAL HOSPITAL, GARTNAVEL.—On Feb. 16th at the annual meeting of qualified contributors to the hospital Dr. D. K. Henderson, physician-superintendent, gave a review of the work at Gartnavel during 1921. The total number of patients under treatment in the hospital during the year was 648, the average number resident 508, and the number of admissions 151, of whom 143 were private cases (92 women and 51 men). This preponderance of female admissions resulted, he said, partly from reaction from the strain of the war years, and partly from the high cost of living and the difficult economic and social conditions. Fifty-two, or approximately 39 per cent. of the admissions, were voluntary cases, which was an indication that the public were beginning to realise that a mental hospital was in every sense of the term a hospital and not simply a custodial institution. The total number of discharges was 136, of whom 39 recovered and 31 were so far recovered as to be cared for at home, where their convalescence could be completed. This comparatively high recovery and improvement rate, which worked out at 52 per cent., should be much more widely recognised than it was. After referring to the mechanism of hysteria, and its parallel with the mental evasion which characterises the outlook of the spiritualist, Dr. Henderson stated that he did not wish to discuss or criticise in any way the revivalist state recently prevalent in certain parts of the country. The physician-superintendent of the Aberdeen Royal Asylum had reported that alarmist statements concerning mental upsets, said to be due to that cause, had no foundation, although such a state of affairs was apt to produce a condition of emotional excess, which, to a certain extent, must affect those who were mentally unstable. Continuing, he said that the results obtained with luminal in the treatment of various forms of epilepsy had been so far satisfactory that the drug should be given a more extensive trial. In conclusion he referred to a review made of all "Service" patients admitted to the hospital. Of a total of 113 service patients, 14 had been discharged as recovered, 7 greatly improved, 3 not improved, 7 transferred to other mental hospitals, and 15 had died. There were still 67 service patients under treatment.

MANCHESTER CLINICAL SOCIETY.—A meeting will be held in the Physiological Theatre of the University, at 4.30 P.M., on March 16th, when an address will be given by Dr. Leonard Hill on the Physiological Principles underlying Light Treatment and Heliotherapy. All practitioners are invited to attend.

ROYAL HANTS COUNTY HOSPITAL.—At the annual Court of Governors held on Feb. 22nd the report for the past year was presented. The number of in-patients treated was 1910 and of out-patients 1619. The daily average number of beds occupied had been 137, and the average stay in the hospital of each patient 19·1 days. There had been an increase in annual subscriptions of £77 19*s.* 9*d.*, while donations had decreased by £182. The new insurance scheme had yielded £3886 and patients' payments had increased from £1414 to £2109. The total ordinary income was £20,588, against £20,746 in the previous year. Ordinary expenditure had increased from £24,765 to £25,669. The extraordinary income had amounted to £6217 and the extraordinary expenditure to £6671. The total result was a deficiency of £5534 on the year.

DONATIONS AND BEQUESTS.—The late Mr. William Crambe Reid of Edinburgh, among other bequests, left by will £8000 to the Edinburgh Royal Infirmary; £8000 to the Longmore Hospital for Incurables, Edinburgh; £5000 to the Edinburgh Royal Blind Asylum; £5000 to the Society for the Relief of the Destitute Sick, Edinburgh; and £5000 to the Royal Victoria Hospital for Consumption, Edinburgh.—By the will of the Hon. Sir Samuel McCaughey, a member of the Legislative Council of New South Wales, the testator left £5000 each to seven hospitals in New South Wales.—Under the will of the late Sir William Matthews, the West Cornwall Infirmary, Penzance, will receive £2000.—The late Miss Kate C. Garrick, daughter of the late Sir James Francis Garrick, Agent-General for Queensland, left £10,000 to the Senate of the University of Queensland to found a Professorship of either law or medicine, in memory of her father.—By the will of the late Miss Ann Dean Roydon, of Chester, the testatrix left £800 to the Children's Convalescent Home, West Kirby; £200 to the Leasowe Sanatorium for Crippled Children; and £100 to the Hoylake and West Kirby Hospital.—The Manchester Royal Infirmary has received the following legacies: from the late Mrs. Sarah Bolton, £2000 for the endowment of two beds; from the late James Fildes, £900; from the late Gertrude Smith, £750; and from the late Mrs. Mary Ann McCarthy, £540; also donations amounting to £425 from various sources.

LEICESTER MEDICAL PRACTITIONERS AND PUBLIC HEALTH.—At the annual meeting of the Leicester Subdivision of the Union of Medical Practitioners, and of the Leicester Public Medical Service, held on Tuesday, Feb. 7th, annual reports were presented by the committee of the subdivision and by the board of management of the public medical service. The committee reported that the schemes for collective locum-tenencies during (*a*) sickness or short absences, and (*b*) summer holidays, had been successfully continued, proving very useful. Six doctors availed themselves of the former scheme and 18 of the latter. At a special general meeting in July, 1921, the subject of donations was brought forward, and a resolution passed authorising a levy of one farthing per annum, per insured person, on the lists of panel practitioners; the levy yielded £107 14*s.* 4*d.*, and donations were made to the Royal Medical Benevolent Fund, to the Leicester District Nursing Association, and to other medical or allied charities. The board of management of the public medical service recorded in its report the continued success of the work. The numbers of subscribers to the various sections of the service in 1921 were 39,097 (first half-year) and 38,935 (second half-year), against 39,883 and 39,139 in the corresponding periods of 1920. In addition, about 12,000 State insured members of the friendly societies are paid for through the service. The rate per capita paid to "acting members" of the service is equal to that paid for 1920. The board has continued the arrangement whereby free medical treatment is provided for the uninsured blind of Leicester. The number of prescriptions dispensed during 1921 was 185,260, against 185,790 in 1920. The arrangement of the board with the Education Committee, for accommodation to be provided at the central dispensary for the dental work of the school clinic, has been continued, and 4596 new cases, in addition to many others, received treatment during the year. A consulting room at the central dispensary, with waiting-room accommodation, has, by arrangement with the Ministry of Health, been provided for the purposes of the regional medical officer. Drugs, &c., have been supplied during the year to several members of the service. The board has again entered into an arrangement with the Leicester guardians for the dispensing of the necessary medicines for the outdoor sick poor.

MINISTRY OF PENSIONS.—The Ministry of Pensions announce that officers and nurses suffering from pulmonary tuberculosis accepted by the Ministry as attributable to or aggravated by service in the war will, under certain conditions, receive retired pay or pensions at special rates for certain periods. Those who, having completed a course of sanatorium treatment, are certified as likely to benefit by, and decide to undergo, a further course of extended treatment combined with training, will continue to receive retired pay or pension at the rate for the highest degree of disablement (100 per cent.) from the commencement of the course until its termination, after which they are entitled without further medical examination by a Ministry board to retired pay at the rate of 100 per cent. for a period of six months, and at the minimum rate of 50 per cent. for two years thereafter. Officers must present themselves for examination by a tuberculosis officer from time to time as directed. Those discharged from sanatoriums on or after Dec. 22nd, 1921, will be granted retired pay or pension at the special rate of 100 per cent. for a period of six months after leaving the institution, provided that the course was completed and that the pecuniary circumstances are such that worry and uncertainty prejudicial to health might result if special rates were not granted. The grant will not be retrospective before Dec. 22nd, 1921. At the end of the six months' period an award will be made at the rate of not less than 50 per cent. for a further two years subject to the same conditions.

BRIGHTON AND HOVE HOSPITAL FOR WOMEN.—This is the only maternity hospital in Sussex. Its main building is in West-street and it has two branches. With 12 beds only the work of this hospital has been carried on since the year 1830. In 1908 efforts were made to secure a new building, without success, and only quite recently has it been found possible to complete the negotiations for the purchase of the old grammar school buildings in Buckingham-road. The new premises are now being converted and, it is hoped, will be ready for occupation early in the autumn. The work the hospital is doing can be gathered from the following figures from the 1921 report: Cases of childbirth attended in own homes, 1382; in-patients at West-street institution, 307; at Hove branch, 45; registered out-patients, 696; investigations at ante-natal clinic, 1075. Contributions from patients during the year amounted to £327 18*s.* 9*d.* A special appeal was made at the annual meeting on Feb. 22nd for support for the hospital, which is sadly in need of funds to carry on its work and to pay the £12,000 required for the new premises.

LIVERPOOL ROYAL INFIRMARY.—The annual meeting was held in the board room of the institution on March 3rd. Mr. Holford Harrison, the treasurer, stated in his annual report that during the past year the number of in-patients admitted was 4153, the number of new out-patients 26,733, and the total of out-patient attendances, 188,206, including 57,795 in the massage department and 3105 in the X ray department. On one day, in the course of last year, no less than 1200 patients availed themselves of the benefits of the institution. The total receipts for the year amounted to £45,619, but the expenditure was £54,609, an excess over income of £8990. The deficit would have been greater had it not been for an exceptional gift of shares valued about £7000 from the executors of the late Mr. Robert Jardine. In the coming year the new scale of salaries for the nurses would entail a larger expenditure. In-patients had contributed £5141, as compared with £1952 in 1920, and contributions from out-patients amounted to £1737, as against £1167 in 1920. A legacy of £10,000 for the new nurses' home had been received during the year, but £15,000 was still required before the committee would feel justified in commencing to build. Mr. George H. Melly, the retiring president, in moving the adoption of the report, stated that the annual maintenance cost of a bed—£70 before the war—was now £150; and it was somewhat disconcerting to find that out of a population of over 800,000 only 660 subscribed to the funds of the institution. He appealed to the citizens of Liverpool to become regular subscribers, no matter how small their subscriptions. Mr. H. Wade Deacon referred to the local Voluntary Hospitals Committees, now being appointed as the outcome of the report of Lord Cave's Committee, as the only hope for the maintenance of the voluntary system. Mr. T. H. Bickerton was unanimously elected president for the next 12 months. He has been associated with the Royal Infirmary for 35 years, and on his retirement from the post of honorary oculist in 1919 was appointed consulting oculist. The honour now conferred upon him is a signal one, for in the long history of the infirmary only two medical men have previously been president of the institution. It is hoped that during his tenure of office Mr. Bickerton may find time to complete his history of the infirmary, for which he has already collected all the facts. General satisfaction is felt by the medical profession in Liverpool at his appointment.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Criminal Law Amendment Bill.

THE text of the Criminal Law Amendment Bill foreshadowed in the King's Speech has now been issued. Clause 1 provides that it shall be no defence to a charge or indictment for an indecent assault on a child or young person under the age of 16 to prove that he or she consented to the act of indecency. By Clause 2 it is proposed to enact that reasonable cause to believe that a girl was of or above the age of 16 years shall not be a defence to a charge under Section 5 or 6 of the Criminal Law Amendment Act, 1885. Under Clause 3 any person convicted for an offence against Section 13 of the principal Act (which relates to summary proceedings against brothel keepers, &c.) shall be liable on summary conviction to a fine not exceeding £100, or to imprisonment with or without hard labour for a term not exceeding three months; and on a second or subsequent conviction to a fine not exceeding £250, or to imprisonment with or without hard labour for a term not exceeding six months. Both fine and imprisonment may be imposed, and, in addition, the convicted person may be required by the court to enter into a recognisance with or without sureties to be of good behaviour for any period not exceeding 12 months, or in default an additional term of imprisonment not exceeding three months may be imposed. Certain modifications are made in the application of the Bill to Scotland, and Section 3 of the Punishment of Incest Act (which requires that all proceedings under that Act are to be held in camera) is repealed.

HOUSE OF LORDS.

WEDNESDAY, MARCH 1ST.

THE Clinical Thermometers Bill was read a third time and passed.

THURSDAY, MARCH 2ND.

The Royal Assent was given by Commission to the Coroners (Emergency Provisions Continuance) Act.

HOUSE OF COMMONS.

TUESDAY, FEB. 28TH.

Pensions Appeals Tribunals.

ON a Supplementary Vote not exceeding £5000 for the salaries and expenses of pensions appeals tribunals, &c., Sir E. POLLOCK, Solicitor-General, explained that after the estimates had been prepared in 1921 there arose a very much larger number of appeals and many arrears accumulated. It was essential to deal swiftly with the cases, and under the circumstances the Lord Chancellor appointed a number of tribunals, 24, in various districts. By the end of 1921 these tribunals had succeeded in clearing off the arrears of appeals, and it was possible to demobilise four tribunals. The remaining 20 were dealing principally with current cases and not arrears. The probability was that if the work further decreased it would be possible to decrease the number of tribunals sitting.—Mr. LAWSON, in moving the reduction of the Vote by £100, said that arrears in cases were due to the fact that the Pensions Ministry itself was deliberately using the appeals tribunals for settling cases which they ought to settle themselves. According to the figures of the Pensions Minister, out of 1391 cases which came before the Newcastle Appeals Tribunal 1162 were unsuccessful and only 229 were successful. The House of Commons, at the request of the ex-Service men, forfeited the right of bringing their influence to bear on these tribunals, and they had had no other opportunity of dealing with the results. He thought that the ex-Service men in the light of the experience they had had would be ready to reverse their decision in that respect to-morrow. These extra tribunals were necessary because they were doing the work of the Pensions Minister and his ordinary medical boards, which were having men wholesale before them.—Mr. CAIRNS seconded the reduction of the Vote.—On a division the motion to reduce the Vote was rejected by 59 to 160.

WEDNESDAY, MARCH 1ST.

Government and the Geddes Report.

On the motion for the adjournment of the House, which was formally moved for the purpose, Sir R. HORNE, Chancellor of the Exchequer, made a statement with regard to the attitude of the Government towards the economies recommended in the Geddes Report. As regards the Ministry of Health, the reduction proposed was £2,100,000, and that he said had been accepted, though it was not all achieved by precisely the same method as was suggested by the Geddes Committee. The Report also suggested that means should be taken to carry out the sale of many of the houses built under the Ministry of Health. With that

recommendation the Government entirely concurred, and they had authorised the Minister of Health to proceed in so far as was necessary to remove statutory restrictions on sale. Another suggestion made was for an increased contribution on health insurance. That also the Government had adopted, the increase being in the amount per head per week of a ½d. from July 1st this year. The War Pensions Administration themselves put forward suggestions for a reduction in their expenses of £6,000,000, and these had been adopted by the Geddes Committee and the Government. That would not involve any diminution in the pensions to which any pensioner was entitled. The saving was entirely effected by economies in the working of the Department itself. Summing up, Sir R. Horne said that the Committee had recommended a reduction in votes of £86,000,000 exclusive of the results of the Washington Conference. Deducting from that total the savings which were unspecified he reached a figure of £71,000,000. The Government accepted in all £64,000,000, but that included the £11,000,000 attributable to the possible savings as a result of the Washington Conference and £1,000,000 possible saving on the supply of oil. That brought the figure down to £53,000,000 and the difference between that figure and £71,000,000 was £18,000,000. Of that sum £12,000,000 was represented by the savings which the Geddes Committee recommended—but which the Government did not accept—in respect of education, so that there was only a sum of £6,000,000 between the Government and its critics as represented by Mr. Asquith. By the savings which the Government expected to effect through the advice of the Geddes Committee and the operations of the Departments they would be able to reduce the provisional estimate put previously before them by £54,000,000 in the next financial year. Dealing with the charge that the Government had done nothing up to now in the direction of economy in national expenditure, Sir R. Horne said that in 1918–19 the Supply Services and Appropriation in Aid took £2,965,000,000. In the year 1920–21 they had reduced the figure for those services to £1,015,000,000, a reduction for that year of £675,000,000. In the current year their estimate for these services would cost £825,000,000, or a reduction of £190,000,000. He anticipated that from the ordinary supply services next year he would get a further reduction of £181,000,000 compared with the present year. That was a record incomparable in the world at the present time. In this country we had no reason to despair. Our burdens were very heavy and our anxieties very great. But we might recognise with gratification that our financial system was to-day, amidst all the vicissitudes of the world, proving ts soundness and stability with the result that of all the countries of Europe we were in the best position to take advantage of any revival of trade that might occur.

Foot-and-Mouth Disease and Impure Milk.

Mr. EVANS asked the Minister of Health whether his attention had been drawn to the fact that a large number of cows in East London were recently found to be suffering from foot-and-mouth disease; and whether he had caused any inquiries to be made to ascertain whether any injurious effect to human beings had followed the drinking of the milk of those cows.—Sir A. MOND replied: Yes, Sir. My attention was drawn to this matter at the time of the outbreak and inquiries were at once made by an officer of my department, in conjunction with the medical officer of health of the district. The supply of milk was stopped as soon as the outbreak was discovered, and the medical officer of health reports that though he has made careful inquiries there is no evidence that any ill-effects have been caused by the consumption of milk previously given by the herd in question.

Grants for Combating Venereal Disease.

Captain ELLIOT asked the Minister of Health what grants were at present being paid to the National Council for Combating Venereal Disease direct; and, through the local authorities, as the 75 per cent. proportion of sums expended by them.—Sir A. MOND replied: The grants paid up to date to the National Council for Combating Venereal Disease during the current financial year amount to £9500. No grants are made direct by local authorities to the National Council.

Treatment of Venereal Disease.

Mr. STEWART asked the Minister of Health whether his attention had been drawn to the details of the ravages in certain families wholly caused by venereal disease; whether any steps, other than voluntary clinics, were being taken by the Government to combat these ailments, which disastrously affected so many innocent victims and added so much to the burdens of the taxpayers and ratepayers in maintaining throughout their lives so many citizens who from ill-health were incapable of doing any proper work; and whether he would consider the advisability of making such diseases notifiable so that they could be dealt with more effectually in their initial stages.—Sir A. MOND replied: The answer to the first part of the question is in the affirmative. The steps taken by the Government to combat these diseases are based upon the recommendations of the Royal Commission, and include not only the provision of clinics at which skilled treatment is provided free of cost, but also an organised campaign of education and publicity as to the dangers of these diseases and the necessity for early treatment. I am not prepared, as at present advised, to suggest legislation for compulsory notification.

Pension Appeal Tribunals Rejections.

Sir ROBERT CLOUGH asked the Minister of Pensions the number of appeals finally rejected by the highest appeal tribunal in each of the last four periods of three months; and what percentage they formed of the appeals actually heard.—Mr. MACPHERSON replied: The number of appeals (officers, men, widows, and dependents) rejected by the pensions appeal tribunals for the four quarters of 1921 are as follows:—

		Percentage to cases decided.
First quarter	4,880	.. 71·9
Second quarter	7,360	.. 73·2
Third quarter.. ..	8,070	.. 73·9
Fourth quarter	11,900	.. 74·2
	32,210	73·5

Assistance for London Hospitals.

Mr. GILBERT asked the Minister of Health if the Hospitals Commission had now distributed the £500,000 voted to assist the voluntary hospitals; the amounts allocated to each of the London hospitals receiving assistance; and whether the accounts of the London voluntary hospitals for 1921 showed any improvement in their financial position.—Sir A. MOND replied: I understand from the Voluntary Hospitals Commission that it is anticipated that the grants made during the present financial year will amount approximately to £120,000, of which £87,900 has been paid to London hospitals. I may explain that applications for grants made through the local voluntary hospital committees are dealt with as soon as they are received. Hospitals have been asked to expedite their applications, but comparatively few have yet been received as their accounts for the year 1921 are not yet made up. Although the figures are not yet complete, the King's Fund estimate that the aggregate deficits for the London hospitals will be substantially less than in 1920, and it is probable that the same will be the case for the provincial hospitals.

The following is a list of Voluntary Hospitals Commission grants (totalling £87,900) approved by the Commission up to Feb. 28th, 1922:—

Canning Town, £700; East London Hospital for Children, £3,000; Elizabeth Garrett Anderson Hospital for Women, £600; Royal Northern Hospital, £11,000; Hampstead General Hospital, £3,400; Hospital for Epilepsy, £850; Hospital for Sick Children, £4,000; Infants Hospital, £1,000; King's College Hospital, £9,000; London Hospital, £10,000; London Temperance Hospital, £2,000; Metropolitan Hospital, £750; Middlesex Hospital, £3,000; Mildmay Mission Hospital, £400; National Hospital for the Paralysed, £800; Prince of Wales's General Hospital, £2,200; Queen Charlotte's Lying-in Hospital, £3,000; Queen Mary's Hospital for the East End, £1,000; Queen's Hospital for Children, £2,100; Royal Free Hospital, £12,000; Royal National Orthopædic Hospital, £3,000; Royal Waterloo Hospital for Women and Children, £500; Samaritan Free Hospital for Women, £800; South London Hospital for Women, £800; University College Hospital, £12,000.

THURSDAY, MARCH 2nd.

Dental Fees.

Mr. G. LOCKER-LAMPSON moved "That an humble address be presented to His Majesty, praying that the Order in Council under the Dentists Act, 1921, dated the 16th day of January, 1922, approving regulations of the Dental Board of the United Kingdom, presented on the 7th day of February, may be annulled." He said that the scale of fees fixed in the regulations were absurdly high. In the past dentists were only charged a fee of £5 on registration, but in future under the new regulations dental practitioners who came on the register would be charged not only a £5 registration fee, but an annual retention fee of £5. It was estimated that about 10,000 dentists would go on the new register, and if that were the case the Dental Board would get a revenue of £50,000 a year from this item alone, which might in a few years rise to £100,000 a year. What were the Dental Board going to do with all this money? But these fees were not the only ones which the Board proposed to charge, and he believed that they would prove a great hardship to the profession. The Board had voted themselves handsome allowances and had acquired the lease of a vacant piece of land to the north of the offices of the General Medical Council in Hallam-street where they proposed to erect handsome offices. He would like to know whether all this expenditure was necessary.—Sir E. BARTLEY DENNISS suggested that some arrangement should be come to that at the end of two or three years, when a certain sum of money had been accumulated, the regulations should again be submitted to the consideration of the House.—Mr. ACLAND, Chairman of

the Dental Board, said that if the motion were carried the whole work of the Board would have come to an end. The fees had not been fixed because it was thought that the money was needed for their administration, remuneration, or comfort. New premises were necessary, the present ones being hopelessly congested. The Board had particularly in mind the overwhelming necessity of acquiring funds for the encouragement of dental education, training, and research.—While the discussion was proceeding the House was "counted out."

Geddes Report and Pension Ministry.

Mr. BETTERTON asked the Minister of Pensions whether, in order to allay the anxiety at present existing, he would state whether the Government had come to any decision with regard to the recommendations made in the Geddes Report in so far as they affect the rates of pensions payable under the existing warrant to disabled officers and men, the medical treatment of the disabled, and the pensions given to parents and dependents of those men who died in consequence of war service; and whether he was able to state that the rates payable under the existing warrants would not be interfered with.—Mr. MACPHERSON replied: I am glad to be able to assure my hon. friend that the rates of pension and of allowance during treatment payable under the Royal Warrants to disabled officers and men will not be reduced except in accordance with the terms of the Warrants which provide for review in 1923.

MONDAY, MARCH 6TH.

Venereal Disease Grant.

Captain ELLIOT asked the Minister of Health whether grants were still being made to private societies in connexion with venereal disease propaganda, although expenditure on maternity and child welfare work was being restricted on account of the great stringency of the present financial position.—Sir A. MOND replied: The grant to the National Council for Combating Venereal Disease is being reduced, but I anticipate that the financial provision to be made next year will enable the public health services generally to be carried on without impairment.

TUESDAY, MARCH 7TH.

National Health Insurance Bill.

Mr. J. H. THOMAS asked the Minister of Health whether it was his intention to proceed with the Bill increasing national health contributions.—Sir A. MOND replied: In view of the objection to increasing national health contributions in present circumstances I have obtained the concurrence of the Consultative Council on National Health Insurance in securing the economies in State expenditure on National Health Insurance recommended by the Geddes Committee, with certain other economies on lines different from those suggested by the Committee. The proposal is that all State expenditure on National Health Insurance, with certain exceptions, such as the cost of the central administration, the cost of audit, and the statutory two-months' contribution, would be defrayed until Dec. 31st, 1923, from the accumulated surpluses of approved societies. This proposal has been accepted by the Government, and legislation to give effect to it is being drafted. Between the present date and Dec. 31st, 1923, the whole position will be reviewed.

Appointments.

ALLCHIN, F. M., M.B., B.S. Lond., D.M.R.E. Cantab., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Radiologist (Diagnostic) to the Middlesex Hospital.

HEWAT, A. M., M.D. Edin., D.P.H., Medical Officer of Health for the Metropolitan Borough of Fulham.

Manchester Royal Infirmary: AITKEN, ISOBEL M. M., M.B., Ch.B. Edin., D.P.H., Assistant Medical Officer (Central Branch). DOUGLAS, W. R., F.R.C.S. Eng., M.B., Ch.B. Vict., and HUGHES, E. E., M.B., Ch.M. Vict., F.R.C.S. Eng., Assistant Surgical Officers (Central Branch). SMITH, J. W., M.B., Ch.B. Vict., Junior House Surgeon. BIRKETT, G. E., M.B., Ch.B. Vict., reappointed Pathological Registrar.

Certifying Surgeons under the Factory and Workshop Acts: MITCHELL, G. L., M.B., Ch.B. Glasg. (Redditch); BUCHANAN, J. V., M.B., Ch.B. Edin. (Shaw); SMART, A. H. J., M.B., Ch.B. Camb. (Polesworth); MACKLIN, C. H., L.R.C.P. Lond., M.R.C.S. (Ampthill); LAWRIE, H., M.B., C.M. Glasg., D.P.H. (Ramsbottom); HARVEY, F., M.R.C.S., L.S.A. (Wadebridge); ELRINGTON, N., L.R.C.P. Lond., M.R.C.S. (Long Sutton).

Vacancies.

For further information refer to the advertisement columns.

Ayr County Hospital.—Res. H.S. £120.
Birkenhead Borough Hospital.—Hon. Phys.
Birmingham, Queen's Hospital.—Med. Reg. £100.
Buxton, Derbyshire, Devonshire Hospital.—Asst. H.P. £150.
Cambridge County Mental Hospital, Fulbourn.—Two Asst. M.O.'s. Each £220.
Canterbury, Kent and Canterbury Hospital.—Hon. Radiologist.
Cardiff, King Edward VII. Hospital.—Anæsthetist. £100.
Carlisle, Cumberland Infirmary.—Res. M.O. £150.
Chester Royal Infirmary.—Asst. H.S. £150.
Durham County Hospital.—H.S. £200.
East Ham County Borough.—Female Asst. M.O. £500.
East London Hospital for Children, Shadwell.—Asst. S. £50.
Exeter, Royal Devon and Exeter Hospital.—M.O. for Elect. Dept.
Farringdon General Dispensary, &c., Holborn.—Hon. Phys.
Folkestone, Royal Victoria Hospital.—Res. M.O. £150.
Glasgow, Woodilee Mental Hospital, Lenzie.—Asst. M.O. £350.
Great Yarmouth Hospital.—H.S. £200.
Harefield, Middlesex County Tuberculosis Sanatorium.—Second Asst. Res. M.O. £350.
Hospital for Sick Children, Great Ormond-street, W.C.—P.
Inverness District Asylum.—Sen. Asst. M.O. £400.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £150.
Kent County Council, Maidstone.—Tuberc. O. £757 11s.
Lanark County District of Lower Ward.—Asst. M.O.H. £500.
London Homœopathic Hospital, Bloomsbury.—P. for Dis. of Nervous System.
London Lock Hospital, Harrow-road, W.—H.S. £300.
London Lock Hospital, Dean-street, Oxford-street, W.—H.S. £200.
Manchester Royal Infirmary.—Hon. Asst. Rad. and Electro-Therapeutist.
Middlesex Hospital Medical School.—Asst. Prof. of Path. £500.
Middlesex Hospital, W.—Res. M.O. Also Asst. Surg. to Ear Nose, and Throat Dept.
Preston and County of Lancaster Royal Infirmary.—Res. Surg. O. £250. H.S. £200.
Prince of Wales's General Hospital, Tottenham.—H.P. and H.S. £200 each. Jun. H.P. and H.S. £120 each.
Putney Hospital (Chester Bequest), Lower Common, S.W.—Res. M.O. £150.
Queen Mary's Hospital, Stratford.—H.P. £150.
Rampton State Institution for Mental Defectives, near Retford.—Asst. M.O. £300.
Rotherham Hospital.—Jun. H.S. £150.
Royal Chest Hospital, City-road, E.C.—H.P. £120.
Royal Northern Hospital, Holloway, N.—H.P. £150. Also Anæsth. £10 10s.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.S. £100.
St. Peter's Hospital for Stone, Henrietta-street, W.C.—Jun. H.S. £75.
St. Thomas's Hospital.—Res. Asst. P. and Res. Asst. S.
Salford County Borough.—M.O.H. £900.
South Shields, Ingham Infirmary and South Shields and Westoe Dispensary.—Jun. H.S. £150.
Sunderland Royal Infirmary.—H.S. £200.
Ventnor, I. of W., Royal National Hospital for Consumption, &c.—Asst. Res. M.O. £300.
Warrington, Lancashire County Asylum, Winwick.—A.M.O. £300.
West Bromwich and District Hospital.—Res. Asst. H.S. £200.
Western Ophthalmic Hospital, Marylebone-road.—Non-Res. H.S. £150.
West London Hospital, Hammersmith-road.—H.P. Two H.S.'s. Each £100.
Westminster Hospital, Broad Sanctuary, S.W.—Cas. M.O. £100.
Worcester General Infirmary.—Res. M.O. £200.
Zanzibar.—Asst. M.O.H. £600.

Births, Marriages, and Deaths.

BIRTHS.

FRY.—On March 1st, at Lee-road, Blackheath, the wife of W. Kelsey Fry, M.C., M.R.C.S., L.R.C.P., L.D.S., of a son, who only survived his birth a few hours.

GOODE.—On March 1st, at Bootham, York, the wife of Henry Norman Goode, M.C., M.B., F.R.C.S.E., of a son.

HICKINBOTHAM.—On Feb. 26th, at Colchester, the wife of J. R. Hickinbotham, M.B., of a son.

KINGSBURY.—On March 1st, at Sussex House, Sutherland-avenue, to Lucienne (née Alexis), the wife of Allan Neave Kingsbury, M.B., B.S., B.Sc.—a son.

MARRIAGES.

WELLS—DUNLOP.—On Feb. 23rd, at All Saints' Church, Compton, Winchester, Philip Hewer Wells, M.R.C.P., M.C., to Doris Joan, youngest daughter of Mr. and Mrs. J. M. Dunlop, "Fairoak," Hants.

DEATHS.

ANGUS.—On Feb. 25th, at Pembridge Villas, W., of pneumonia, John Alexander Angus, M.R.C.S., L.R.C.P.

ASHFORD.—On Feb. 21st, Edwin Charles Ashford, L.R.C.S., M.R.C.P. Edin., of the Moorlands, Bath, and Middlezoy, Somerset, aged 83.

HILL.—On Feb. 22nd, at Freshwater Bay, Isle of Wight, Alfred Hill, M.D., F.R.S.E., F.I.C., late Medical Officer of Health for the City of Birmingham, in his 96th year.

LEWIS.—On Feb. 26th, suddenly, at Ivy House, Luton, Beds, Colton Taylor Lewis, M.R.C.S., L.R.C.P.

POWELL.—On March 4th, at a London nursing home, Cecil Powell, B.A., M.B. Cantab., of Calverton House, Stony Stratford, Bucks.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, March 16th.—List of probable papers: Dr. H. H. Dale and C. H. Kellaway: Anaphylaxis and Anaphylatoxins. J. C. Bramwell and Prof. A. V. Hill: The Velocity of the Pulse Wave in Man. Dr. Alexander Fleming: On a New Bacteriolytic Element found in Tissues and Secretions. (Communicated by Sir Almroth Wright.) J. W. Pickering, D.Sc., and J. A. Hewitt, Ph.D.: The Action of "Peptone" on Blood and Immunity thereto. (Communicated by Prof. W. D. Halliburton.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, March 13th.

WAR: at 5.30 P.M.
Paper:
Squadron-Leader H. E. Whittingham, R.A.F.: Observations on Sandfly Fever in Malta.

Tuesday, March 14th.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
In the *Pharmacological Laboratory, University College, Gower-street, W.C. Demonstration:*—
Dr. C. V. Anrep: Methods of Experimentation on Conditional Reflexes.

PSYCHIATRY: at 8.30 P.M.
Adjourned Discussion on the Ideal Clinic for Nervous and Borderland Cases.

Wednesday, March 15th.

HISTORY OF MEDICINE: at 5 P.M.
Demonstration:
Dr. Herbert R. Spencer: A Demonstration of the Obstetrical Works of Scipione Mercurio.
Paper:
Mr. Frank Romer: A Short History of "Bonesetting."

Thursday, March 16th.

DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
Cases:
Dr. Knowsley Sibley will show a case of Leuconychia Striata.
Other cases will be shown.
Paper (at 8.30 P.M.):
Dr. J. Darier (Paris): Des Cancers Epithéliaux de la Peau.
A luncheon will be held in Dr. Darier's honour at 1 P.M. at the Trocadero Restaurant. The price will be 7*s.* 6*d.*, exclusive of wine. Will all members who wish to attend the luncheon send their names to Dr. Barber, 7, Devonshire-place, W., by return of post.

Friday, March 17th.

OTOLOGY: at 5 P.M. (Cases at 4.45 P.M.)
Cases will be shown by Mr. E. D. D. Davis, Dr. Dan McKenzie, Mr. Norman Patterson, and others.

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Discussion on the Pathological Changes Produced in Subjects rendered Unconscious by Electric Shock and the Treatment.
To be opened by Dr. Morison Legge.
Dr. Goodman Levy and Prof. MacWilliam will also take part.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, March 13th.—8.30 P.M., Dr. E. W. Goodall: The Differential Diagnosis of the Common Exanthemata (with lantern illustrations).

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
THURSDAY, March 16th, at 8.15 P.M.—A Laboratory Meeting will be held at the Royal Army Medical College, Millbank, S.W. Demonstrations will be given by, amongst others: Lt.-Col. H. Marrian Perry, Lt.-Col. W. P. MacArthur, Major J. A. Manifold, Major S. Elliott, Lt.-Col. Clayton Lane, Major H. C. Brown, and Dr. H. M. Woodcock.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.
WEDNESDAY, March 15th.—7.30 P.M., Mr. J. E. Barnard: The Future of the Microscope in Medical Research. Dr. H. Hartridge: Monochromatic Illumination and a Low Power Eye-piece with Large Field.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.
TUESDAY, March 14th.—5 P.M., Second Milroy Lecture: Dr. Major Greenwood: The Influence of Industrial Employment on General Health.
THURSDAY.—5 P.M., Third Milroy Lecture.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, March 13th.—5 P.M., Dr. Scott Pinchin: Fibrosis of Lung.
TUESDAY.—5 P.M., Dr. G. Pernet: Some Affections of the Scalp, Syphilitic and Otherwise.
WEDNESDAY.—5 P.M., Mr. MacDonald: Retention of Urine.
THURSDAY.—5 P.M., Prof. Sir Clifford Allbutt: Angina Pectoris. (Open to all Medical Practitioners.)
FRIDAY.—5 P.M., Mr. Simmonds: Osteomyelitis and its After-effects.
Daily:—10 A.M., Visit of Post-graduates to Wards. 2 P.M., In-patient and Out-patient Clinics, Operations.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
THURSDAY, March 16th.—(At St. James' Municipal Hospital, Ouseley-road, Balham), 4 P.M., Mr. Zachary Cope: Common Sprains and their Treatment.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, March 13th.—5.30 P.M., Dr. Price: The Heart in Relation to Life Assurance.
Daily:—10 A.M. and 2 P.M., Out-patients and In-patients.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC POST-GRADUATE COURSES, Queen-square.
MONDAY, March 13th.—12 noon, Dr. Greenfield: Disseminated Sclerosis, &c. 2 P.M., Dr. Hinds Howell: Out-patient Clinic.
TUESDAY.—2 P.M., Dr. Grainger Stewart: Out-patient Clinic. 3.30 P.M., Dr. Saunders: Cranial Nerve Lesions (I.).
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Hysteria.
FRIDAY.—2 P.M., Dr. Gordon Holmes: Out-patient Clinic. 3.30 P.M., Dr. Saunders: Cranial Nerve Lesions (II.).

HOSPITAL FOR SICK CHILDREN, Great Ormond-street.
THURSDAY, March 16th.—4 P.M., Mr. H. Tyrrell Gray: Intestinal Obstruction.

CANCER HOSPITAL, Fulham-road, S.W.
TUESDAY, March 14th.—4 P.M., Dr. Leitch: The Experimental Production of Cancer.
FRIDAY.—4 P.M., Mr. Percival P. Cole: The Cold Cautery Treatment.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
WEDNESDAY, March 15th.—6 P.M., Dr. Eric Pritchard: The Feeding of Children between 9 Months and 2 Years.
FRIDAY.—Dietetic Treatment of Young Children in Certain Common Complaints.

BRITISH MEDICAL ASSOCIATION (CHESTERFIELD BRANCH) POST-GRADUATE COURSES.
FRIDAY, March 17th.—(At Chesterfield Royal Hospital Board Room) 2.30 P.M., Dr. Yates: Neurasthenia. 3.15 P.M., Dr. Wilkinson: Symptoms of Danger in Ear Cases.

MANCHESTER FRENCH HOSPITAL, POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
THURSDAY, March 16th.—4.30 P.M., Dr. A. C. Magian: Difficult Labour.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, March 14th.—4.30 P.M., Dr. T. H. Oliver: Diabetes.

MANCHESTER BABIES' HOSPITAL POST-GRADUATE LECTURE, Slade-lane, Manchester.
SATURDAY, March 18th.—4 P.M., Dr. Chisholm: Malnutrition.

ANCOATS HOSPITAL.
THURSDAY, March 16th.—4.30 P.M., Dr. Stirling: Iritis and Glaucoma.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
Lectures on Tuberculosis and Public Health.
WEDNESDAY, March 15th.—4 P.M., Dr. W. H. Dickinson: The Organisation and Conduct of Tuberculosis Dispensary Work.

PEOPLE'S LEAGUE OF HEALTH, Royal Society of Arts, John-street, London, W.C. 2.
Course of Lectures on the Mind and What We Ought to Know About It.
MONDAY, March 13th.—6 P.M., Sir Frederick Mott: Mind and Body.

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THE "COLD PLAGUE" OF THE WAR OF 1812–14.

BY THE HON. WILLIAM RENWICK RIDDELL, LL.D., F.R.HIST.SOC., &c.,
JUSTICE OF THE SUPREME COURT OF ONTARIO.

THE epidemic of pneumonia upon the Continent of America during the years of the Anglo-American War of 1812–14 has not escaped the observation of medical writers; a short account of it is given, for example, by Dr. August Hirsch of Berlin, in his excellent Handbook of Geographical and Historical Pathology.* A historical investigation for a different purpose has placed me in possession of information which apparently was not available to Dr. Hirsch or other medical historians, and I have thought it right to place on record some of the results of my inquiry.

Information not Hitherto Utilised.

There are three main sources of information which were not consulted by Hirsch, though all are highly instructive. Dr. James Mann, hospital surgeon in the American Army, published at Dedham in 1816 his Medical Sketches of the Campaign of 1812, 13, 14, containing a somewhat detailed account of the disease in the American Army.[1] Dr. Joseph Trent, of Richmond, Virginia, wrote an article on the Winter Epidemic of 1812, 1813, and 1814, which appeared in the *Richmond Argus*, April 17th, 1814, and was reprinted in part in the Medical Repository of New York for 1815, vol. v., pp. 216–218.[2] In addition to these two medical writers there is an author of whom the world has not heard—William Steward, D.D., of Bloomfield, Somerset County, Maine—a Baptist minister who thought that "medical education never qualified a man to practise physick and surgery," but who, receiving his skill direct from God himself, "officiated in the practice of physick without ever reading or studying a medical author." But, not content that others should be in the same plight, he published in 1812 a pamphlet, the Healing Art, of which I can find no trace in any library, and in 1823 a corrected and improved edition, adding "all his late improvements and new discoveries both in physick and surgery."[3] He had in the meantime taught himself Latin; but the little book proves that the teacher was incompetent or the student dull. He cheerfully and confidently rushes in where even Buchan might fear to tread, and shows how to cure everything from cancer to corns and from "that Israelitish curse" the pox, to worms.

William Steward's Account of the "Cold Plague."

However much we may disagree with his therapeusis, there can be no doubt of his ability to observe accurately and to express clearly and truly what he observed; he was a shrewd Yankee who could and did see things as they were. even if he did speak of the ductus bilis as the "duck bile" and did think that the stomach had bones. He gives a graphic account of the "Cold Plague" which he met for the first time at Eaton, New Hampshire,[4] in April, 1812; at the same time he heard by letter of the destruction caused by this "going fever" (as they called it) in Upper Canada and the Middle and Western States (i.e., those as far west as Ohio). In the neighbouring villages of Gilmanton and Londonderry[5] "they died so fast, the well ones were afraid to take care of the sick, on account of catching the disorder or fever so-called." Steward met with cases of Cold Plague all the way to Ballston Springs, six miles south-west of Saratoga, N.Y., but the epidemic died out with the advent of warm weather.

The principal sufferers were men of ages from 20 to 50 who were most exposed to the cold in preparing firewood, caring for cattle, going to mill and to market, &c.; there was much mortality among the emigrants making long and tedious journeys, and among the wives and children who accompanied them; while the aged, nursed by the fire, and children kept from school on account of the cold, were practically immune. Steward insisted that the Cold Plague was no more "catching" than a broken leg.

Hirsch agrees with his authorities[6] that the starting-point of the pandemic (as it became) was Canada; but I can find nothing in contemporary letters or reports in this Province to justify the statement. Epidemics of pneumonia began in New England certainly as early as 1712 and there were scattered outbreaks during the first decade of the nineteenth century—one in Vermont during the winter of 1810–1811[7]—and there is no need to look further north for the *fons et origo mali*. While the pandemic was manifest as such only in the winter and spring during all the years it lasted, sporadic cases were found during the whole period from 1812 to 1826 (and especially till 1815); and in almost all the territory devastated by it. There was a recrudescence of the epidemic amongst the civil population when the cold weather set in late in the autumn of 1812. It began about Dec. 1st; Steward notices its advent in Old Schoharie, some 30 miles west of Albany. The renewal of the plague was attributed to militiamen who had been called out for three years and who were returning from the frontier lines; they were said to spread the contagion through the State again. It is possible that this was the fact; a dry and hot July was succeeded by floods or rain in August, September was pleasant, but October was wet and cold; there were in these months many cases of dysentery and diarrhœa, intermittent fevers, and, in the latter part, rheumatism and measles.

Inevitable Result of Lack of Supplies.

All these were to be expected—there never was a nation less prepared than the United States when it declared war in June, 1812, and the state of the troops on the Niagara Frontier was disgraceful. Dr. Mann gives a graphic account of the want of supplies for both regulars and militia; contemporary documents, official and otherwise, reprinted by General Cruikshank are more striking still.[8] At first the troops had no camp equipage, but were generally healthy, with few cases of fever; but it was not long before they became sickly and remained so; and, although full inquiry was ordered into the condition of the sick and the causes of the disease, whilst cleanliness was enjoined by general order, the sick list grew alarmingly. General Van Rensselaer reported to General Dearborn on Sept. 1st, 1812, that he had more than a hundred men on the sick list, with only 691 fit for duty. "Many of the men are without shoes and all are clamorous for pay . . . . we are extremely deficient of medicine and hospital stores; of lint and bandage cloth we have none nor any surgical stores." General Isaac Brock reported on Sept. 13th that great sickness prevailed all along the American line, one or two military funerals per day being observed; and deserters were coming in who reported bad usage, bad and scant food, and a total want of pay, and that there was much sickness. Notwithstanding general orders to attend faithfully to the sick, the position of the remainder of the army was not improved, Van Rensselaer had again, on Sept. 15th, to say to the Governor "many (of the troops) are destitute of shoes and indeed such clothing as is necessary for the approaching season, and all are extremely clamorous for their pay," five days later he reported to Dearborn the same clamour for pay, and that "to cheer up our hearts we have picked up a birch bark on which is written a notice from the soldiers to the officers that unless they were paid they would absolutely quit the field in eight days from that time." Detachments came in "without clothing . . . . neither of them have medicine chests," and many of Van Rensselaer's forces were left without necessary clothing. This may help to explain the disgrace at Detroit in August and the disaster at Queenstown Heights in October; for it is to be remarked that American sailors gave a good account of themselves from the very beginning, and proved themselves worthy scions of the parent stock.

Spirit Rations.

Dr. Mann says that the pneumonia was first observed in the encampment at Greenbush (opposite Albany) towards the end of October, but the official reports show at least a few cases on the Niagara frontier as early as August. He attributed it to "long and unremitted exposure to cold," and noticed that "in proportion to increase of cold, this disease became more frequent and severe." Hirsch says that "its epidemic character did not come out except in winter and spring." Dr. Mann, however, gave as an exciting cause "immoderate potations of spirits"; and says, "not a few who were subjected to the epidemic of 1812–1813 fell victims to that disease from this exciting cause." Sometimes the non-commissioned officers whose duty it was to issue the spirit ration obliged the men to drink it all at once, to save the trouble of pouring it into their canteens; and the sutlers sold to the soldiers as much liquor as they could buy. He compared the British deserters, who "exhibited marks of high health," with the American soldiers who "were pallid and emaciated"—the British soldier had no spirit ration and liquor could not be procured in Upper Canada for money. The better condition of the British was an undoubted fact, but Mann was mistaken as to the first reason he gave for it; a liquor ration was served out [9] to the troops, consisting of potent Canadian whiskey like the *whiskey blanc* of the French Canadian habitant. The second cause had more foundation; an Act was passed in 1813 by the Parliament of Upper Canada restraining distillation

* London, 1886, vol. iii., pp. 132–133

of spirit from grain, but this came to an end, March 1st, 1814, chiefly for the sake of the troops, who it was supposed could not get along without spirits.[10]

Other Causes: Incidence.

Other exciting causes, according to Dr. Mann, were "filth and dirt," "emanations from putrefaction," want of discipline, want of warm clothing (such as woollen shirts), want of proper food, sudden changes in the weather, exposure to cold and wet, and later when the troops went into barracks, crowded, overwarm, unventilated rooms. While a few cases were observed as early as October, Dr. Mann agrees with the quack doctor, Steward, that the disease became epidemic about Dec. 1st. Meanwhile the condition of affairs in the American troops on the Niagara frontier was deplorable. Nov. 6th, 1812, "the regulars daily sickening, ... no attendance at the hospitals, ... a volunteer company . . . . stacked their arms and told their officers that they have been in the service three months without receiving pay or clothes and that they would not stand guard again in the cold without shoes, stockings, and pantaloons and with the mere covering of a blanket," and Nov. 18th there was "great desertion . . . . wholesale and retail through starvation . . . . and much sickness prevailed on the line. At Buffalo, 20 of Smyth's regulars died since October 28, and 100 are now sick in the hospital." On Nov. 27th, there is an official report of "a fever which is becoming every day more alarming"; by December, it was fully recognised that this fever was contagious: it had proved "fatal to so many citizens and very many soldiers." Contagion was spread by those of the latter as were given their release from service.

Dr. Mann says that the disease was called by various names—asthenic, typhoid or typhous pneumonia, pneumonia notha, bilious pneumonia, malignant bilious fever; sometimes it was considered not asthenic but sthenic, sometimes a form of typhus fever—but there can be no doubt of its identity with the pneumonia known for centuries in Europe; and, as Hirsch says, "the malady had . . . . the typhoid or asthenic character more or less pronounced." It is well recognised that the causes mentioned by Dr. Mann were real exciting causes—"overcrowding of rooms, want of adequate ventilation, accumulation of decomposing organic matters, ... errors of hygiene."

Comparison of British and American Armies.

The effect of such causes and others may perhaps be made to appear by a comparison of the sick in the American Army with the sick in the British Army in Upper Canada. In the latter, Nov. 25th, 1812, out of 1411 men there were 61 sick; in the former a report from the "Camp nigh Buffalo, New York" states, Nov. 27th, 1812, that one company originally of 92 men had been depleted by death and desertion to 80 of whom 30 were sick; in another, the figures were 95 reduced to 89 with 53 sick; in another, 99 reduced to 95, 28 being sick, whilst the captain thought not more than 50 could march. Other companies were not dealt with in detail, but the surgeon reported about 40 in hospital, most of whom he feared would not survive; the proportion of sick in the one army was nearly ten times that in the other—42 per cent. American to 4¼ per cent. British.

The Epidemic Amongst the Civil Population.

The epidemic was most prevalent both in the army and in the civil population in December, 1812, and January and February, 1813; it spread over New York, Vermont, Connecticut, and New England generally, also to the States as far west as Ohio. In Pennsylvania, apparently, it was not epidemic, but cases were found; Dr. Benjamin Rush died of this disease, April 12th, 1813. Steward gave an appalling account of its ravages as witnessed by him when travelling from Old Schoharie through Albany, Ballston Springs, Middlebury, Vt., Bennington, Vt., Ballston Springs again, Northumberland, N.H., to Bloomfield on the Kennebec—"in all these routes, I was surrounded by the Cold Plague, and in many places it was difficult to get any refreshment or entertainment at night on account of the sweeping disease; some of the tavern signs were muffled with black cloths, others were taken down, some, posts and all, were cut down, and some publick houses were left entirely destitute of inhabitants. In some places where I put up for the night there would be three or four corpses in the neighbouring houses and three or four more added by the next morning, and in most of these places they were enquiring of me what they must do to be saved from its destruction." The disease ceased to be epidemic in 1813, on the return of the warm weather; but renewed its ravages in the autumn, repeating the same series in 1814 and the winter of 1814–15; it ceased to be epidemic in 1815 in the north. In the Southern States, it continued to be epidemic until 1826.

Treatment.

Dr. Mann found bleeding[11] the most effective treatment, followed by sulphate of soda as a cathartic and calomel as an alterative or a purgative, with antimonials in nauseating doses; he emphatically disapproved of any use of spirits.[12] Steward, who found "the practice of the doctors in general erroneous and fatal," treated by sweating. "Some . . . . over kettles and tubs with a general selection of vegetables for foments, others . . . . lying in their beds with the hot herbs wrapped up in cloths and others with boiled blocks of popple wood or basswood, bottles and bladders of hot water, &c."; but he "did not use pukes and physicks nor attempt to let blood . . . . as some did, ... as many a fool in his practice did, which was most commonly attended with immediate death"; and he never lost a case but one to whom he was called too late.

Some of the symptoms described by Dr. Mann are suggestive of the "Spanish influenza" which visited this continent in the recent war, and, like the Cold Plague, was considered as having come from abroad; he does not mention influenza at all; but Dr. Henry recognised a form of the epidemic, similar to the influenza which raged in Paris in 1803 and was then called *la grippe*.[13] There had been outbreaks of this disease in the western hemisphere from as early as 1655, and perhaps earlier; but Hirsch does not recognise any from 1807 till the autumn of 1815. I venture to suggest that the Cold Plague of 1812–15 was the same as the recent "Spanish influenza" and accompanied by the same deadly pneumonia.

Terminological Nationalism.

That "Spanish flu" did not come from Spain is reasonably clear;[14] it was called by the name of a foreign country, like many another disease—for example, the Mal de Naples, the French pox, the English sweating sickness. We still have German measles; the Russians call influenza Chinese catarrh, Germans often call it the Russian pest, the French call it Italian fever and Spanish catarrh; while the Italians invented the name "influenza," as it was supposed to be produced by the influence of the stars. In President Jackson's time his opponents in the United States called it "Jackson's itch," and his supporters "Tyler's grippe."[15]

Influenza has certainly remained true to type for centuries, and it is at least a curious coincidence that in the last war wherein armies of the English-speaking world fought against each other and the first in which they fought side by side the same epidemic should have appeared with the same evil results to civilian and soldier.

References.

1. An article of his in the American Medical and Philosophical Register for 1813, vol. iii, 497, was consulted by Hirsch, who was ignorant of this more extended work. I owe to General Cruikshank of the Militia Department, Ottawa, thanks for bringing to my attention this book in the Parliamentary Library, at Ottawa.

2. Unknown to Hirsch, I have a photostat from the copy of the Medical Repository in the office of the Surgeon-General of the United States at Washington.

3. My copy of this delectable work I owe to the kindness of my friend Dr. Eben Alden, of Thomaston, Maine.

4. Eaton, a small town in Carroll County, New Hampshire.

5. Gilmanton in Belknap County and Londonderry in Rockingham County are still made towns in New Hampshire; Bloomfield in Somerset County was annexed to Skowhegan in 1861.

6. Dr. Comstock, New York Medical Repository, 1815, vol. iii., No. 1, and Dr. Leaming, Transactions of the New York State Medical Society, 1880, 168, and Boston Medical and Surgical Journal, 1880, 205.

7. Hirsch, op. cit. 132, Dr. Leconte, American Medical and Philosophical Register, 1811, i., 200.

8. Documentary History of the Campaign upon the Niagara Frontier, 9 volumes, Lundy's Lane Historical Society, 1902–8.

9. By District General Order at Fort George, Nov. 9th, 1812, the practice was positively forbidden of soldiers on fatigue "giving over their allowance of spirits to each other by which means several of the men had been frequently intoxicated," and it was ordered that "whenever a man refuses his allowance of spirits it might be retained and returned into store for the public service." Doc. Hist., &c., iv., 188.

10. See my article "The First Canadian War-Time Prohibition Measure?" 1 Canadian Historical Review (June, 1920), pp. 187–190.

11. "The patient sometimes fainted with the loss of 8 oz. of blood at first who subsequently was bled 16 oz. without any collapse of the vessels," op. cit., 23; sometimes 70 oz. were taken in four days; do. 27.

12. "A fortunate administration of stimulants in a solitary instance only within my knowledge proved successful while their . . . . use induced a most deadly practice." Do. 23.

13. That "La Grippe" had a very wide diffusion in France in the winter of 1802–3 is recognised by Hirsch, op. cit., i., 12.

14. See "Epidemic Respiratory Disease," Drs. Opie, Blake, Small and Rivers, St. Louis, C. V. Mosby Company, 1921.

15. The name "La Grippe" was said by Dr. Grant in his "Observations on the Late Influenza," London, 1782 (Hirsch, i., 35, 46), to be derived from an insect called "la gripe" common in England and France in the preceding spring which was supposed to have infected the air. I can find no support for this etymology; Littré knows nothing of it, nor does any of the French or English lexicographers. The word is from "grippe," to seize, the reference being to the "gripe," on the throat, of the disease. Kant is said to have had the idea that the Russian trade with China brought noxious insects which got scattered abroad in course of time. Hirsch, i., 35 (n.). It is perhaps no generally known that the famous French lexicographer Littr

was educated for the medical profession and was prepared to take his examinations, when the death of his father in 1827 obliged him to abandon his purpose. He wrote much on medical subjects, and, amongst other things, published an edition of Hippocrates. As he says in his delightful "Médecine et Médecins," Paris, Didier et Cie., Pref., p. 2, "J'ai vécu dix ans dans les hôpitaux comme externe, comme interne, comme disciple assidu à la visite de M. Rayer et cependant je n'ai passé aucun examen, n'ai aucun titre médical et ne suis pas docteur."

PLAGUE IN MODERN AND MEDIÆVAL TIMES.

Prof. J. J. van Loghem, director of tropical hygiene in the Colonial Institute at Amsterdam, delivered the Chadwick lecture at 11, Chandos-street, London, W., on March 2nd, on the subject of "The Plague Question of Europe To-day." He paid a tribute to English workers and to the valuable lessons learnt from the visitations of plague in India, which had served to prepare the Dutch authorities for its later appearance in Java in 1911. In a historical comparison between plague as it was known in mediæval times and at the present day, Prof. van Loghem claimed that the associated factors concerned in the development and spread of the disease were equally responsible at widely remote periods; the disease was mainly of bubonic type, and dependent on the presence of the plague-stricken black rat (*Mus rattus*), with its infected fleas, living in close proximity to human beings. There also existed, as to-day, a seasonal relation to hot weather, during which the rat and its parasite were most active, as shown by the heavy incidence and mortality during the hot months, recorded in the epidemics of the seventeenth century in England and Holland. The gradual spread of the disease among occupants of one block of houses to those of another block in the same quarter—such as could well be accounted for by development of plague among rats—was also noted. Charts showing the probable rate of distribution in a particular quarter at different periods during the Amsterdam epidemic in 1617 had been constructed as the result of careful research into the old burial records of the parish; these charts lent considerable support to the views expressed as to seasonal influence and mode of spread of infection by rat migration. These various factors could also be traced by close study of literature of the seventeenth century, notably Daniel Defoe's classic account of the plague in London in 1665. Familiarity with the black rat was evident from its frequent appearance in old woodcuts showing the typical features of the large ears and long tail; seventeenth-century prints, too, of sufferers from the disease display the well-known distribution of the glandular bubo in the neck, the axilla, and the groin.

Early Measures of Disinfection.

The old health regulations, which enforced the closing of infected dwellings and removal of healthy occupants from neighbouring houses, emphasised the need for disinfection. In the process of fumigation the use of arsenic and other substances are mentioned as of value, but requiring great care on account of their supposed poisonous vapours, which were held responsible for the dead rats found in the infected premises. There can be little doubt, however, that the animals had died of plague previous to the disinfection. Interesting reference to animals as possible carriers of plague infection is to be found in old accounts of the epidemics; cats, dogs, and rats are mentioned.

The Hollow Bamboo as a Nest for Rats in Java.

For purposes of comparison the lecturer gave a description of plague at the present day as occurring in Java, where the association between the infected black rat, once so common in Europe, and the human victims of the disease was well illustrated with lantern-slides. By this means it was shown that the hollow bamboo, forming a large part of the framework of native houses and bedsteads, afforded means of entry and nesting places for the rats, which thus came into close proximity with the occupants. Wherever a case of plague occurred, nests and dead bodies of plague-stricken rats were found in the bedstead or wall of the room. The use of bamboo for building purposes has now been officially forbidden in Java; native houses must be built of wood in such a way as to prevent access by rats, particular attention being paid to the sharp inclination of the roof and its lighting for purposes of inspection.

Conditions Favouring the Spread of Plague.

The necessary conditions which Prof. van Loghem laid down as favouring the spread of plague were probably even more prevalent in mediæval Europe than at the present day in India and Java. In the seventeenth century the black rat was abundant in Western Europe. The majority of town-dwellers occupied overcrowded and confined quarters, where the custom of sleeping on straw bedding in walled-in cupboards, with storage of grain and stalling of animals on the ground-floors, provided every attraction to the rat and ensured its easy contact with human beings.

The Pneumonic Type.

Pneumonic plague, although a probable form of the disease in the past, was less recognisable than the bubonic type in the old accounts of epidemics in mediæval Europe. Whereas the bubonic form depends for dissemination on the rat, the pneumonic variety is regarded as spread by contact with human sources of infection. Records in literature exist to show that towards the end of the eighteenth century the common black rat began to be displaced from Western Europe by the brown rat (*Mus decumanus*). With the steady withdrawal of the former, the risk of plague as an epidemic has gradually receded eastwards and the diminishing danger of its occurrence in the west has well-nigh disappeared. *Mus decumanus*, now much the commoner species in Europe, though liable to plague infection, nests and breeds in places well removed from human habitation, such as the banks of waterways and in sewers, and has therefore far less chance of acting as a source of infection to man. Such instances of plague outbreak as Prof. van Loghem quoted of recent occurrence in Western Europe have been restricted to workers in the sewers, whose occupation brings them in contact with infection derived from the brown sewer rat.

NON-RESIDENT PRIVATE NURSES.

SINCE we published a list of districts served by visiting nurses (THE LANCET, Feb. 11th, p. 305), we have received the following additional names of coöperations and private nurses offering such service:—

Districts.	Nurses available.	Where obtainable.	Telephone.
Kensington ..	1 ...	J.T.H. ...	West 3028
,, N. ..	1 ...	P. (3) ...	—
Bloomsbury ..	1 ...	J.T.H. ...	Museum 7161
S. Hampstead ..	2 ...	M.S.N.H. ...	Hampstead 3678
S.E. London ..	1 ...	P. (4) ...	—
Paddington ..	1 ...	P. (5) ...	—

J.T.H. = St. John's and St. Thomas's House, 12, Queen-square, Bloomsbury, W.C. 1.

P. (3) = Miss Rose Herbert, 50, St. Luke's-road, N. Kensington, W. 11.

M.S.N.H. = Medical and Surgical Nursing Home, 57, King Henry's-road, S. Hampstead, N.W. 3.

P. (4) = Miss C. H. Robson, 55, Burnt Ash Hill, Lee, S.E. 12.

P. (5) = Miss Lucy Colbeck,[1] 8, Manor-place, Paddington.

Non-resident visiting nurses for any district in London are supplied by the Registered Nurses' Society, 431, Oxford-street, W. (Mayfair 5138). The Nightingale Training School, St. Thomas's Hospital, S.E. 1 (Hop 4191) has one non-resident visiting nurse only, others having given it up owing to the uncertainty of the work. No definite district is served by practitioners applying for this nurse. Other nurses who do not limit their services to any one district are Miss Hilary,[1] 63, Wimpole-street, W. 1 (Paddington 1456), and Miss M. Cleave of 8, Hatfield House, 108, Great Titchfield-street, W. (Museum 1087). Queen Charlotte's Hospital, Marylebone-road, N.W. 1 (Paddington 29) and the Brixton Hill Maternity Home, 43, Brixton Hill, S.W. 2 (Brixton 617) supply visiting maternity nurses.

We have received many letters from nurses anxious to undertake the work, but uncertain how to make themselves known. We suggest that they should call on all practitioners resident in the district they propose to serve, but must warn them that from letters received from practising nurses we find that the demand for their services may be irregular. As yet visiting nursing would seem an unstable means of livelihood, so that the nurse should have private means to fall back on. The following letter is typical of many we have received:—

"I was much interested in your article on 'Visiting Nursing.' I have been doing it for the last 10 years and consider it the most disappointing and uphill work one can do—and should never be undertaken unless one has money at one's back. One is either run off one's legs, and refusing work, or one is wondering when another case is coming in; also one must always be at the end of the 'phone in case one is needed, and can never feel free. I was first attached to a company, but they gave me so little work and I had to pay percentage on *all* my cases, so I now work on my own, and have a very large connexion. In spite of it, however, I am often wanting work, and am always thinking how I can get better known. I don't consider the public realise they can get visiting nurses, and I sometimes think doctors fear we may take things out of their hands.

I have known several nurses who have given it up because they could not get enough work. I enclose my card."

We still believe that the difficulties can and will be overcome—perhaps by coöperative principles, but the pathway of the pioneer is never an easy one.

Rev. J. P. BACON PHILLIPS is correct in believing the claim to be "preposterous."

[1] For these names we are indebted to the *Nursing Times*.